Miranda

Xmedia Suite 4.00

Vertigo XG

Advanced HD/SD Graphics Processor

Configuration Guide

M856-0200-400

www.miranda.com

Xmedia Suite v4.0

Vertigo XG

Advanced HD/SD Graphics Processor (Single/Dual Channel)

Configuration Guide

Miranda

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Printed in Canada

Document Identification

- **Title**: Vertigo XG Configuration Guide
- **Part number**: M856-0200-400
- **Software version**: Xmedia Suite v.4.0
- **Last revised**: April 3, 2008

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1 INTRODUCTION

The Vertigo XG is Miranda's full-featured HD/SD graphics processor providing high performance single or dual channel graphics rendering and video playback performance. The Vertigo XG is ideal for a wide range of advanced real-time broadcast applications, like HD/SD dual-casting with independent graphics for HD and SD, and single channel applications demanding sophisticated, multi-channel branding and promotional graphics.

Figure 1-1. Miranda's Vertigo XG Graphics Rendering System

The main purpose of this Configuration Guide is to provide practical reference and procedural information on how to use the XG Dashboard application to configure the Vertigo XG graphics processing system.

The following sections of this document provide information regarding the capabilities and features of the Vertigo XG and its configuration software, XG Dashboard:

- "About the Vertigo XG" on page 1-2
- "Key Features" on page 1-4
- "Licensing Information" on page 1-5
- "Preliminary Guidelines and Recommendations" on page 1-7
- "Vertigo XG Hardware" on page 2-1
- "VertigoXG and Renderer Windows" on page 3-1
- "XG Dashboard - Vertigo XG's Configuration Software" on page 4-1

Vertigo XG configuration procedures are described in the following chapters of this document:

- "XG Dashboard - Vertigo XG's Configuration Software" on page 4-1
- "Vertigo XG Configuration Procedures and Schemas" on page 5-1

About the Vertigo XG

The Vertigo XG is a hardware-based graphics rendering system for producing real-time HD/SD graphics for broadcast branding and productions.

As illustrated in figure 1-2, the Vertigo XG is used in conjunction with Xmedia Suite v4.0 applications, which allows you to create and publish a wide range of graphics, including advanced, data-driven broadcast applications that link on-air graphics elements to live data feeds through simple drag-and-drop operations. The Xstudio application also allows you to create “soft” control panels to control the broadcast. Each Vertigo XG includes one fixed version of Xstudio-LT for template creation, and one fixed version of Xplay for playout control. Note that dual channel Vertigo XG devices come with two copies of Xplay.

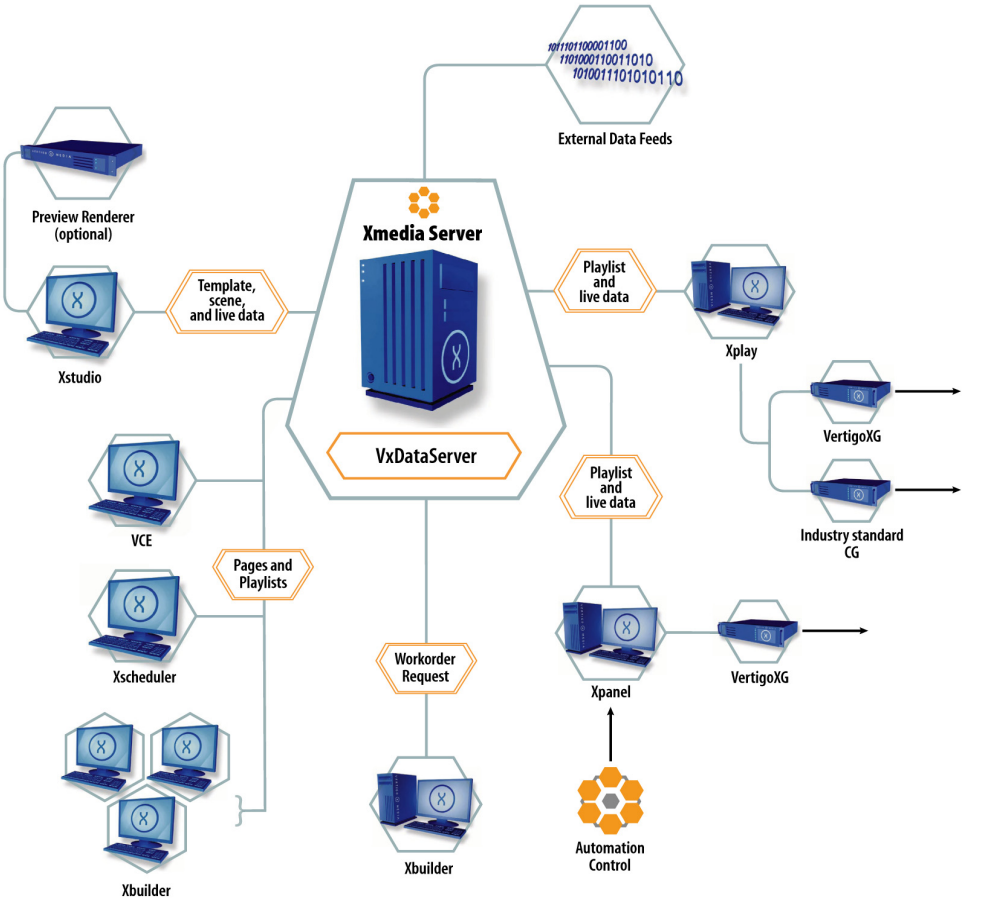


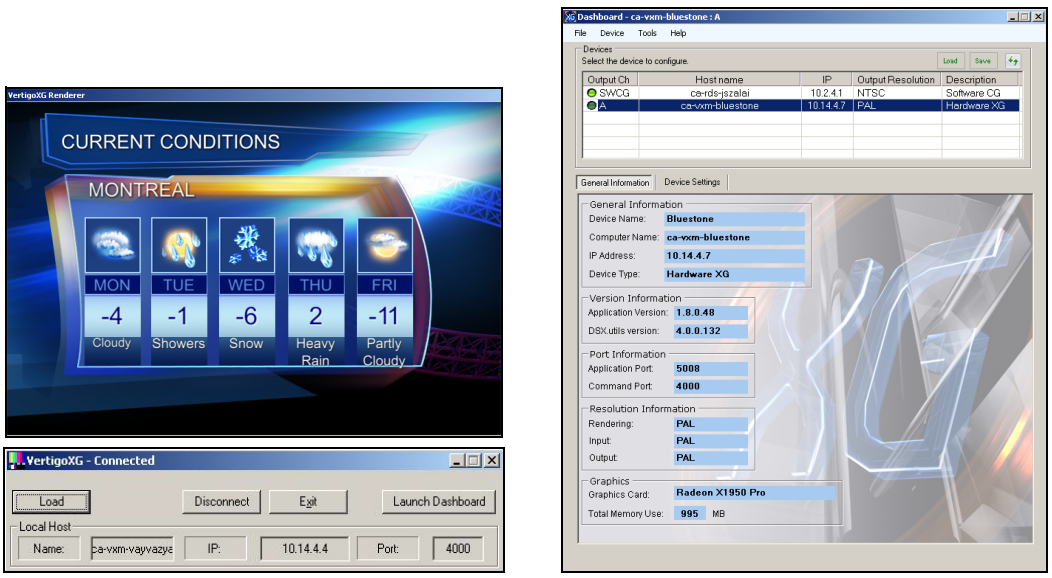
Figure 1-2. Sample architecture of Miranda’s Xmedia Suite v4.0

The Vertigo XG has two software interfaces, the VertigoXG window and the XG Dashboard, to help you run and configure XG devices (see figure 1-3). The VertigoXG window is used to load scenes to be outputted by the Vertigo XG device. The Vertigo XG can also be configured to have the VertigoXG window open simultaneously with an additional window, the Renderer (or Live Window), allowing you to preview loaded scenes on the host computer's monitor.

The XG Dashboard application is a new addition to the Vertigo XG. Through a single user interface, you can perform hardware/software configuration and monitoring of one particular XG device, or all available XGs currently running on the network. The XG Dashboard also offers a series of pages containing the parameters that control how video and audio is outputted.

See the following sections for more information about the XG Dashboard application:

- "VertigoXG Window" on page 3-2
- "XG Dashboard - Vertigo XG's Configuration Software" on page 4-1
- "Vertigo XG Configuration Procedures and Schemas" on page 5-1



VertigoXG & Renderer Windows

XG Dashboard

Figure 1-3. The Vertigo XG software interfaces

Vertigo XG devices are available in various configurations, depending on the number of channels needed, the format of the output, and the storage options. Options also exist for audio, clip playback, and external control (GPI 7 RS422). See "Vertigo XG Hardware" on page 2-1 for more information.

Key Features

Some of the Vertigo XG's key features include:

- 0, 1 or 2 Video input channels
- 2 or 4 Video output channels
- SD and HD Video support
- AES audio support: 8 in / 16 out AES/EBU audio total, 4 in / 8 out per output video channel
- 16 embedded audio channels per SDI stream
- Independent DVEs on each Video input
- Tri-mode hardware Video bypasses
- VAnc + VBI extraction, and processing
- VAnc/VBI pass through
- Integrated CG, Clip Player, Audio Player
- Multi-format clip player, which supports most broadcast codecs
- QuickTime and AVI with alpha channel playback
- Centralized graphics creation, browsing, management, and distribution supported by the Xmedia Server
- Customizable run-time control panels with integrated Xpanel software
- Optional Xstudio authoring tools for easy creation of scenes, graphics, templates, and virtual control panels.
- Unlimited virtual layers that can be controlled independently
- Real-time control of live data sources with automatic on-air updates
- True Type/Unicode character support
- One seat of Xplay is included with each channel of the Vertigo XG purchased which integrates the following features and functionality:
  - Keyframe animation editor and timeline for real-time animation playback
  - "As run" logging
  - Automation interface via RS-232/422, GPI, TCP/IP, and Chyron Intelligent Interface (III)

Licensing Information

There are four (4) types of licenses available for the Vertigo XG to operate in its full capacity. An additional license is available/required for the software CG. Each of the licenses is described in the table below.

XGSD 4.0	The Vertigo XG requires an SD application license when outputting at SD resolutions.
XGHD 4.0	The Vertigo XG requires an HD application license when outputting at HD resolutions. An HD application license will also allow the XG to output at SD resolutions.
XGAUDIO 4.0	The Vertigo XG requires a license to output certain types of audio. These include: voice overs, clip audio, and AES discrete audio input/output. This does NOT include embedded audio input/output.
XGCLIP 4.0	The Vertigo XG requires a license for clip playback.
XGSOFTWARE 4.0	The SoftwareCG requires a software application license to function properly. If the SoftwareCG does not have a valid application license, then the LiveWindow will show the message "Unlicensed Application" and the SoftwareCG will be internally disabled. It will only accept Dashboard connections at this point.

Instructions for verifying and installing licenses are available on page 5-3.

The Vertigo XG licenses are stored and managed by the Xmedia Server. Therefore, it is important to specify the proper XMS connection settings on Dashboard's Licensing page (see page 4-27).

The Vertigo XG will not lose any functionality if they're missing licenses. When the XG detects that the user is trying to use a feature that is not licensed (ie: running the XG without a proper application license, playing a clip without a clip license, or trying to use the AES discrete audio without an audio license), it will enable a watermark feature.

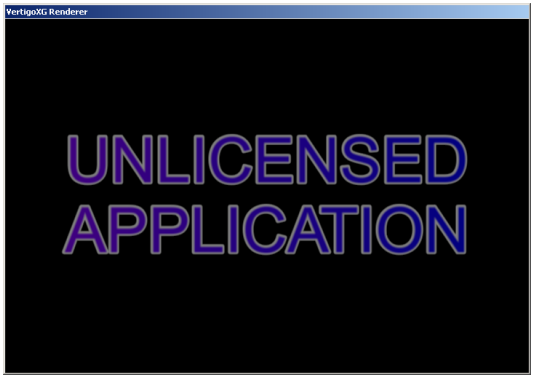


Figure 1-4. A watermark message appears if the Vertigo XG is not properly licensed

The watermark appears on screen 2 hours after the initial license violation was detected. The watermark only appears on screen for 5 seconds. The watermark will again appear 1 hour later and then every subsequent 30 minutes until a valid license is entered. 10 seconds before showing any watermark, the XG will send a callback to the controlling application (i.e. Xplay, Xstudio...) notifying it that the watermark is about to be shown on air. If the user acknowledes the message, then Xplay will signal the XG not to show the watermark that one time.

Preliminary Guidelines and Recommendations

Before you begin configuring and using the Vertigo XG, it is important that you read and understand the guidelines and recommendations contained in the following sections. Respecting these guidelines and recommendations will help to optimize the device's performance and help you to make more informed usage decisions.

- "Vertigo XG Recommended Media Formats" on page 1-7
- "Vertigo XG Virus Protection Guidelines" on page 1-10
- "Publish Path Coordination Guidelines" on page 1-13

Vertigo XG Recommended Media Formats

The Vertigo XG is a fully software based clip/image/media reader, which allows for a significant amount of flexibility with regards to media formats. However, to ensure optimal generation and playback, the following topics make recommendations regarding which media formats are preferred:

- "Image Format" on page 1-7
- "Cel Animation Format" on page 1-7
- "Clip Format" on page 1-8
- "Audio Format" on page 1-9

Image Format

As the Xmedia Suite handles static image file format conversions, the Vertigo XG supports several image formats. However, for optimal results we recommend the following format:

`Targa(.tga) 32bit uncompressed`

Cel Animation Format

As the Xmedia Suite handles static image file format conversions, the Vertigo XG supports several image formats. However, for optimal results we recommend the following format:

A sequence of Targa (`.tga`) 32bit uncompressed (i.e. `bug_00001.tga` to `bug_09999.tga`)

Clip Format

Clip playout is only available with the Vx-ClipPlayer option (see "Clip Player" on page 2-10). With this option, the Vertigo XG supports several Clip formats. For optimal results, it is recommended to use the MPEG-2 (`.MPG` or `.mpeg`) media format. The Vertigo XG's decoders are optimized for MPEG-2, including HW acceleration, which results in significant CPU savings. Since MPEG-2 does not typically support alpha channel, the Vertigo XG also accepts Quicktime's `.MOV` format. Although supported, `.MOV` files may have certain HD playback limitations that can be avoided by using MPEG-2 instead.

☑ NOTE

Windows Media Player 11 must be installed on the PC. However, QuickTime should not be installed on the PC. Rather, QuickTime Alternative (version 1.81) should be installed. If QuickTime is installed it will conflict with QuickTime Alternative and MainConcept's MPEG2 player.

For HD clip encoding, it is highly recommended that MPEG-2 be used as the primary encoding format.

Video Format	**NTSC**	**PAL**	**1080i30M**	**1080i25**
Region	North America	Europe	North America	Europe
Resolution	720 x 480	720 x 576	1920 x 1080	1920 x 1080
Frame Rate	29.97 Drop Frame	25 Non-Drop Frame	29.97 Drop Frame	25 Non-Drop Frame
Data Rate	8 MBits	8 MBits	20 MBits	20 MBits
MPEG-2 Profile	4:2:2	4:2:2	4:2:2	4:2:2
MPEG-2 Level	High	High	High	High
Field Order	Interlaced, 2nd Field Top	Interlaced, 1st Field Top		
	De-interlaced, Progressive			

Audio	• **SAMPLE TYPE**:16-bit • **SAMPLE RATE**: 48 kHz • **CHANNEL COUNT**: 2 (stereo)

For QuickTime formats, it is recommended that you use the following H.264 settings:

Video	• **RESOLUTION**: 1920 x 1080 • **FRAME RATE**: 29.97, Drop Frame • **DATA RATE**: Constant Bit Rate, 20 MBits • **PIXEL RATIO**: Square • **FIELD ORDER**: Progressive (If the source is interlaced, be sure to activate de-interlacing in XG Dashboard)
Audio	• **COMPRESSION**: 24-bit Integer • **SAMPLE TYPE**:16-bit • **SAMPLE RATE**: 48 kHz • **CHANNEL COUNT**: 2 (stereo)

☑ NOTE

Some issues may arise when using H.264 within the QuickTime wrapper. These issues can be overcome by generating an MPEG-4 using H.264 encoding, instead of generating QuickTime files using H.264 encoding. For more information, contact Miranda's Technical Support department.

☑ NOTE

Due to an error in the current direct show MOV decoding Codecs, all `.mov` files must have an accompanying audio track. This track can be empty though.

Audio Format

The Vertigo XG will pass embedded audio channels through with the video, while discrete audio is only available through the addition of the Vx-Audio option (see"Audio Input/Output Channels" on page 2-7). In addition, any audio processing (i.e. adding voiceovers, sounds, audio ducks, etc.) also requires the Vx-Audio option. The Vertigo XG only supports the Wave (`.WAV`) audio file format, and the audio file must have the following properties:

- **SAMPLE TYPE**: 16 bit
- **SAMPLE RATE**: 48 kHz
- **CHANNEL COUNT**: 2 (stereo)

☑ NOTE

MP3 audio files are not supported, as audio files must be 48 kHz.

Vertigo XG Virus Protection Guidelines

Proper network setup and anti-virus software are key components of any virus protection strategy. As such, we highly recommend that you adhere to specific rules outlined in this section to avoid adversely affecting your production equipment's on-air performance. Our virus protection strategy, therefore relies on anti-virus software protection combined with the following:

- Network Setup and Configuration – A best case scenario for configuring your network for maximum protection against infection.
- Scheduled Scanning – In the event that the setup described in "Network Setup and Configuration" cannot be implemented, this section offers strategies for configuring anti-virus software and scheduling scans at the optimum times.
- Standard Anti-Virus Protection – Standard anti-virus practices for machines and applications not directly used for putting material on-air.
- Institution of Policies – Policies that all users must follow in order to avoid introducing infected files into the system.

Network Setup and Configuration

Ideally, the Xmedia Server and other non-critical components should be running anti-virus software, while the Vertigo XGs reside on a separate network. In such a case, the Vertigo XGs would not be running anti-virus software, leaving them potentially vulnerable. Therefore, provide proper protection and minimizing potential performance issues, it is recommended that restricted access be available by means of switch (see figure 1-5). It is also recommended that all other Xmedia equipment would be kept on a separate network isolated from other machines in the facility.

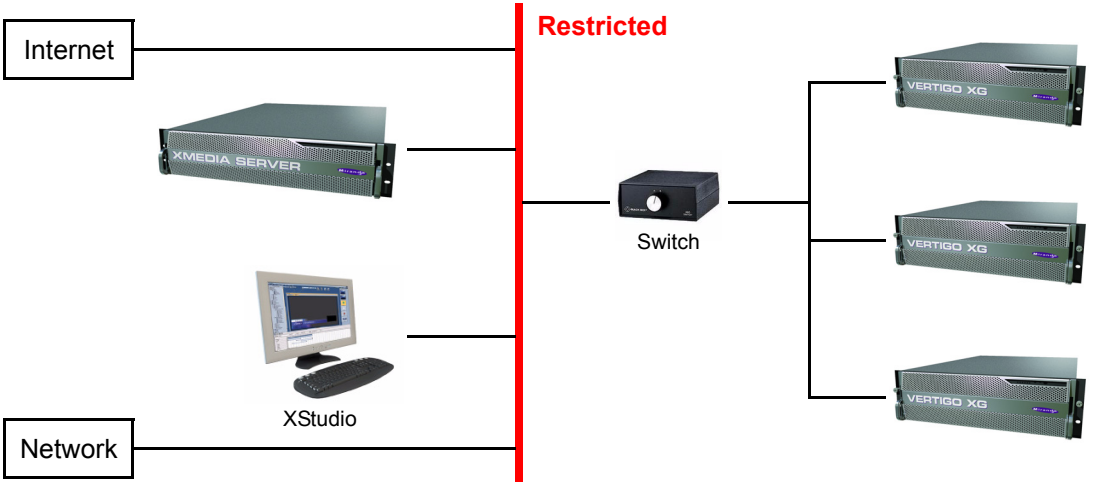


Figure 1-5. Recommended network configuration to provide virus protection

The only machine the Vertigo XG needs to access is the Xmedia Server on port 14050 and the Data Server on port 14060. The playout machines need access to the Vertigo XG on ports 4000, 15000, and the Vertigo XG usues port 4545 (UDP) and ports 5000 to 5010 for Dashboard connections.

If isolating the Vertigo XGs is not possible try Scheduled Scanning.

Scheduled Scanning

If isolating the Vertigo XGs in the manner described the Network Setup and Configuration section is not an option, the following measures constitute a good alternative.

While it is understood that following all guidelines may not be practical, they nevertheless provide a high level of protection against system infection.

- NEVER share a folder or drive with “Everyone” with full-access.
- ALWAYS assign a local Administrator password to every machine. Failure to do so poses a serious security threat.
- Do not store files with .EXE extensions in directories with write permissions.
- Disallow Internet access on all Vertigo Xmedia machines that do not require it.
- Install and run anti-virus software on all PC components that are not used for on-air play out.

Anti-virus software can potentially degrade the performance of on-air applications, resulting in video or audio glitches in the on-air output. We therefore caution against the installation of anti-virus software on any hardware components used on-air and recommends regularly scheduled system scans. These should be performed during periods when the system is not being used and the Vertigo XG is not running. Moreover, scans should occur daily.

Virus scanning software should be installed on a separate machine that can be used as a central management console (see figure 1-6). Your IT department should make sure that the proper permissions and configurations are set up on each individual Vertigo XG to allow for network scanning from the central console.

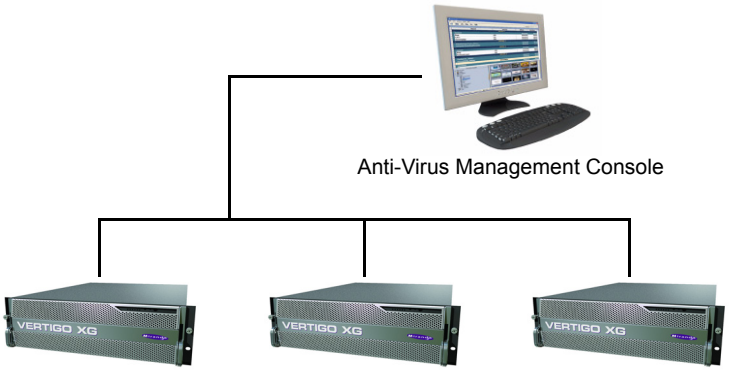


Figure 1-6. Install virus scanning software on a central management console

Most anti-virus applications allow for the exclusion of certain files from the virus scan. As the Vertigo XG relies heavily on media files, there can be a large number of these files on the system. To speed up scanning, these files can be excluded from the scans. Being non-executable files that cannot spread to other systems, they pose no risk for infection.

The list below specifies the file types that can be excluded through the anti-virus software.

- Clip files: `.AVI`, `.MPG`, `.DV`, `.MOV`
- Standard image files: `.BMP`, `.G`, `.GF`, `.JPG`, `.PCD`, `.PCT`, `.PCX`, `.PIC`, `.TGA`, `.TIF`, `.TV`
- Standard audio files: `.WAV`

Standard Anti-Virus Protection

While critical for the on-air production process, many od Miranda's Xmedia Suite products do not put material directly on air. We therefore recommend that these products be configured with the same high level of anti-virus protection used for other machines on the broadcaster's network.

The following Xmedia Suite products should be configured with the highest level of anti-virus protection:

- Xmedia Server
- Data Server
- Xstudio
- Xbuilder

The following applications should also be configured with the highest level of anti-virus protection, unless installed on the same machine as the Vertigo XG. In this case, refer to the recommendations in "Network Setup and Configuration" on page 1-10.

- Xplay
- Xpanel

Institution of Policies

While the guidelines outlined in the previous sections are critical to your broadcast network's protection from infection, end users must accept some responsibility. We therefore recommend that your IT department enforce the following policies:

- Any machine that will be attached to the same network as the Vertigo XG must undergo a complete system scan.
- Any floppy, zip or other external media to be copied to or run on the Vertigo XG must undergo a complete scan.
- Material to be used in 24/7 operation should not be copied to the Vertigo XG. Instead, it should be transferred only during maintenance periods.
- Do not download Internet files directly onto the Vertigo XG.

Publish Path Coordination Guidelines

The Xmedia Suite moves media from the central store, the Xmedia Server, to the Vertigo XG rendering device in a process referred to as publishing. A special service active on the Vertigo XG, the Xpublish Agent (XPA), is responsible for receiving and processing the publish requests and making the media available to the Vertigo XG. The XPA service's Base Path setting controls where media is stored on the recipient device, and this setting must match where the Vertigo XG rendering engine is looking to find the media.

Therefore, the publish path directory setting must be identical in the Xpublish Agent and the XG Dashboard. The default directory for Vertigo XG hardware devices is `F:\Scene`, on both the Xpublish Agent and XG Dashboard. To ensure that assets are properly stored and available to the Vertigo XG, It is recommended that you verify that these settings match.

To emphasize the importance of matching the publish path settings, figure 1-7 demonstrates the logic of these settings:

1. Graphics that are created using an external graphics editor are ingested into Xstudio.
2. The graphics are stored on the Xmedia Server as assets and then used to build scenes in Xstudio.
3. When the scenes are published, the Xmedia Server transfers the files to the Xpublish Agent running on the Vertigo XG. The Xpublish Agent saves the files locally to the directory path specified in its Base Path parameter (i.e. `F:\scene`).
4. When the Vertigo XG wants to load and render these scenes, it recalls the files from the storage directory specified in the XG Dashboard's Publish Path parameter, which must be identical to the directory location where the Xpublish Agent saved to the files. If not, then Dashboard will be looking in one directory, while the files are stored in another.

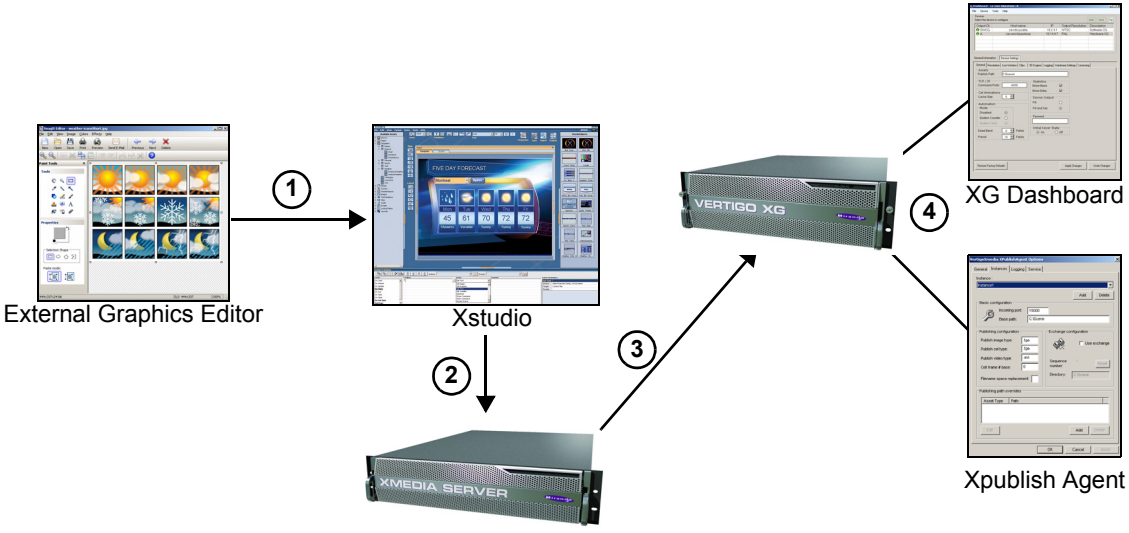


Figure 1-7. Publish Path settings must be identical

Verify that the publish path directories are identical

1. Open the VertigoXmedia Xpublish Agent and verify/edit the Base Path parameter on the Instance tab.
   a. Open the **VERTIGOXMEDIA XPUBLISH AGENT** from the host computer's Windows Control Panel.
   START>SETTINGS>CONTROL PANEL>VERTIGOXMEDIA XPUBLISH AGENT
   b. Select the **INSTANCES** tab.
   c. Verify that the directory location in the **BASE PATH** parameter is set to `F:\Scene`.
   If it is, then click **OK** to exit.
   If it is not, then type `F:\Scene` in the Base path parameter's text box and click **OK**.
2. Open XG Dashboard and verify/edit the Publish Path parameter on the Device Settings' General page.
   a. Open the XG Dashboard application (see "Starting the XG Dashboard" on page 4-3).
   b. Select the XG hardware device from the Device List.
   c. Select the Device Settings tab.
   d. Verify that the directory location in the **PUBLISH PATH** parameter is set to `F:\Scene\`. If it is, then there is no need to make changes.
   If it is not, then type `F:\Scene\` in the **PUBLISH PATH** parameter's text box and then click the **APPLY CHANGES** button.

2 VERTIGO XG HARDWARE

The Vertigo XG is a broadcast graphics system for both rich branding and production graphics. Physically, the Vertigo XG is a 3RU rackmount rendering platform that incorporates redundant fans, power, and ethernet ports, with RAID-enable storage, expandable up to 1.8 TB.

The following table demonstrates that the Vertigo XG is available in various configurations, depending on the number of channels needed and the format of the output.

Model of Vertigo XG	I/O Support	Clip Playback
VX-VertigoXG-SD11 Single channel SD graphics engine	• 1 SDI input • 1 SDI F + K output	• SD Clips
VX-VertigoXG-SD22 Dual channel SD graphics engine	• 2 SDI inputs • 2 SDI F + K outputs	• SD Clips
VX-VertigoXG-SD02 Dual F+K output SD graphics engine (no input)	• 0 SDI inputs • 2 SDI F + K output	• SD Clips
VX-VertigoXG-HD11 Single channel HD graphics engine	• 1 HD-SDI input • 1 HD-SDI F + K output	• SD/HD Clips
VX-VertigoXG-HD22 Dual channel HD + SD graphics engine	• 1 HD-SDI input • 1 SD-SDI input • 1 HD-SDI F + K output • 1 SD-SDI F + K output	• SD/HD Clips
VX-VertigoXG-HD02 Dual F+K output HD + SD graphics engine (no input)	• 0 HD-SDI inputs • 1 HD-SDI F + K output • 1 SD-SDI F + K output	• SD/HD Clips

The following options are also available to enhance the performance and capabilities of the Vertigo XG:

- Additional RAID media storage (see “Media Storage” on page 2-9)
- Discrete audio (see “Audio Input/Output Channels” on page 2-7)
- Clip playback (see “Clip Player” on page 2-10)
- EAS text and audio integration (see “Audio Input/Output Channels” on page 2-7)
- PCI 8 Reed Relay Output/8 Isolated Input Module
- BlueStorm/LP RS-422/485, Universal PCI

Vertigo XG Chassis Overview

Physically, the Vertigo XG is a 3RU rackmount rendering platform that incorporates redundant fans, power, and ethernet ports, with RAID-enabled storage expandable up to 1800 GB. Figure 2-1 illustrates that the Vertigo XG features easy frontal access to the SCSI drives, and a control panel featuring LEDs and buttons for system monitoring and operation. The rear panel also provides convenient access to three power supply modules, six PCI expansion slots (video, audio, and graphics cards), and various I/O ports (USB, COM1, VGA, Ethernet...etc).

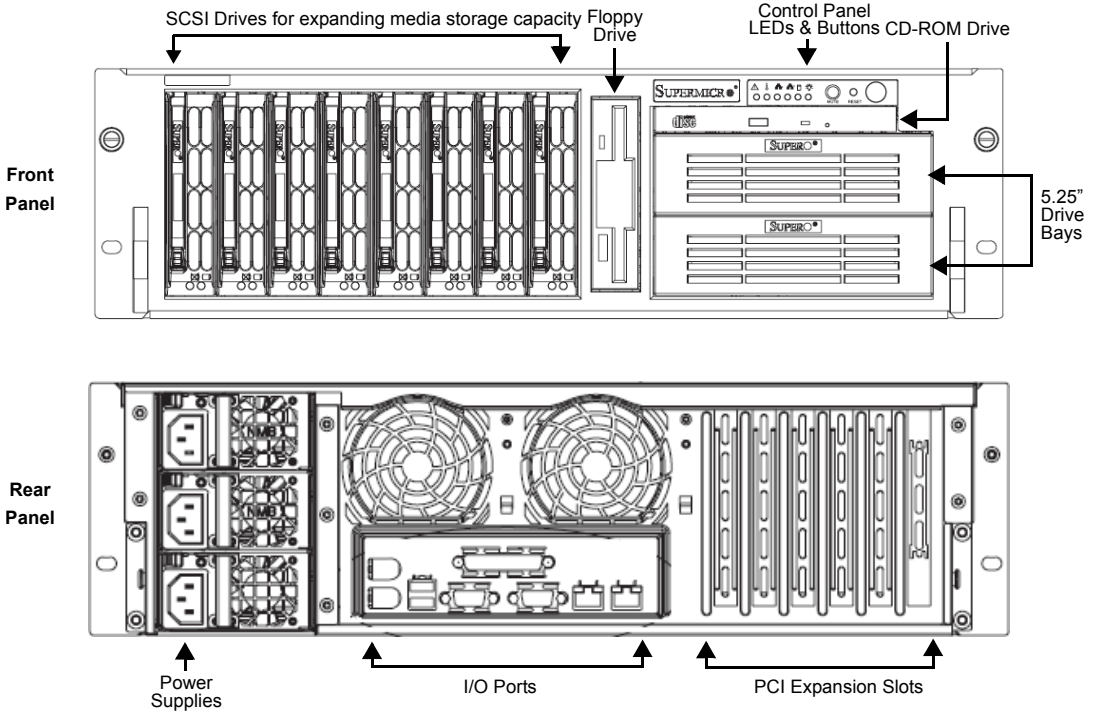


Figure 2-1. The Vertigo XG device chassis (front and rear panel view)

Chassis	**FORM**: 3U rackmount chassis **HEIGHT**: 5.2" (132mm) **WIDTH**: 17.7" (450mm) **DEPTH**: 25.5" (648mm)
Power consumption	3 x 380W power supplies. Maximum draw is a total of 760W.

Figure 2-2 demonstrates that the control panel located on the front of the Vertigo XG chassis has six LEDs and three buttons. The table following the figure 2-2 describes the function of each LED and button, as well any corrective action you may need to take.

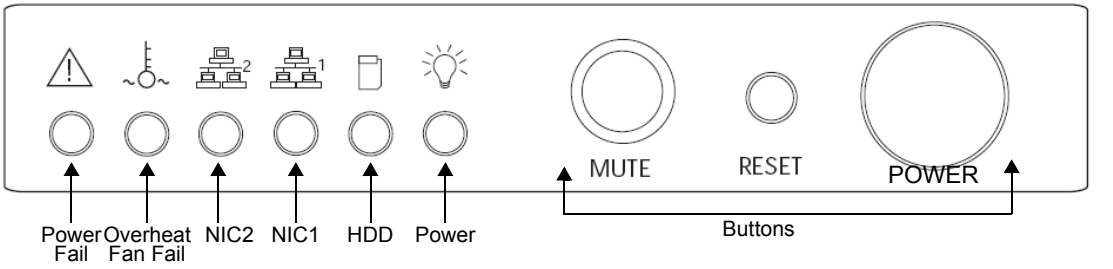


Figure 2-2. Vertigo XG chassis control panel LEDs and buttons

POWER FAIL	Indicates a power supply module has failed. This should be accompanied by an audible alarm. A backup power supply module will take the load and keep the system running, but the failed module will need to be replaced. This LED should be off when the system is operating normally.
OVERHEAT / FAN FAIL	When this flashes, it indicates a fan failure. When it is constantly illuminated (solid on), it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of cables and make sure that all fans are present and operating normally. You should also check to make sure that the chassis covers are installed properly. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the above mentioned conditions exist.
NIC2	A flashing NIC2 LED indicates network activity on LAN2.
NIC1	A flashing NIC1 LED indicates network activity on LAN2.
HDD	Indicates IDE channel activity.
POWER (LED)	Indicates that power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is in operation.
MUTE	Press the Mute button to silence the buzzer alarm, which is activated by a signal received from the SCSI drive backplane. After silencing the alarm, you should then press the button again to reactivate the alarm function.
RESET	The Reset button reboots the system.
POWER (BUTTON)	This is the main power button, which is used to apply or turn off the main system power. Turning off this button removes the main power, but keeps standby power supplied to the system.

Vertigo XG Signal Path and Rendering Processes

The Vertigo XG HD/SD graphics processor block diagram (figure 2-3) demonstrates that the audio and video signals are brought into the Vertigo XG hardware, exposed to various processing options, and then rendered for output.

To help you make more informed configuration decisions, the following sections describe the signal path and processing options that performed by the Vertigo XG hardware and software drivers.

- "Video Input/Output Channels" on page 2-6
- "Audio Input/Output Channels" on page 2-7
- "Ancillary Data Processing" on page 2-8
- "Graphics Processing" on page 2-8
- "Media Storage" on page 2-9
- "Clip Player" on page 2-10

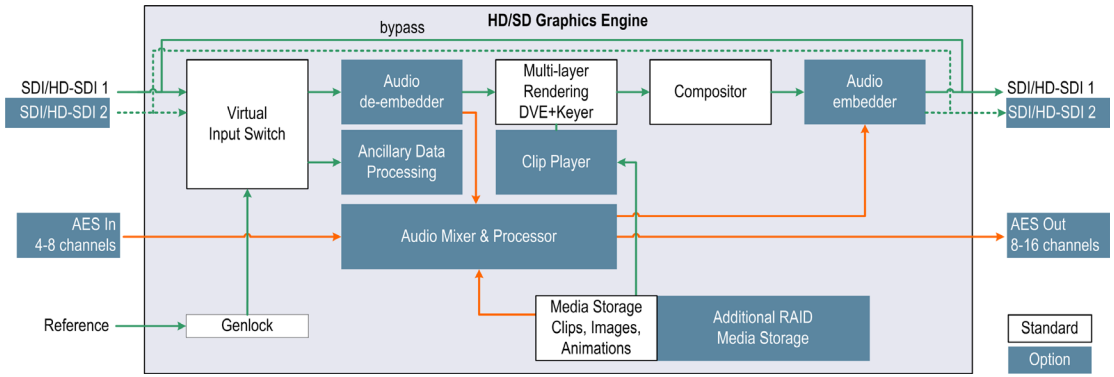


Figure 2-3. Vertigo XG HD/SD graphics processor block diagram

Video Input/Output Channels

Depending on the model of Vertigo XG, the Vertigo XG offers 0, 1, or 2 video input channels with SD and HD video support.

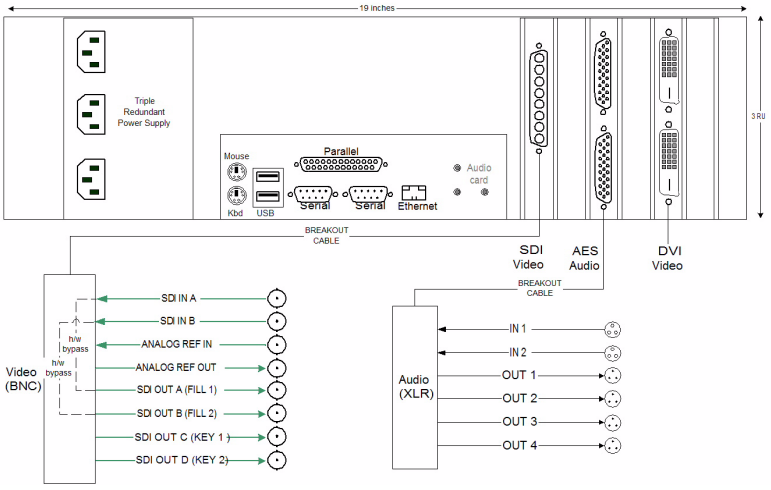


Figure 2-4. Wiring configuration for the Vertigo XG

Pin/Channel Name	Description
SDI In A	SDI IN A is the primary input channel connection.
SDI In B	SDI IN B can act as a separate Fill channel.
Analog Ref In	Analog Ref In is the input reference signal used by the Genlock hardware to synchronize the phase timing video and graphics processing.
Analog Ref Out	Analog Ref Out is the output reference signal used by the Genlock hardware to synchronize the phase timing video and graphics processing.
SDI OUT A (Fill 1)	SDI OUT A (Fill 1) is the primary output channel connection.
SDI Out B (Fill 2)	SDI OUT B (Fill 2) is the second output channel in a dual-channel configuration. No signal is present at this connection for single-channel configurations.
SDI Out C (Key 1)	• SDI OUT C is the matching Key channel for SDI OUT A. • When the OnBoardCompositor firmware option is installed, SDI OUT C & D become dedicated Key channels.
SDI Out D (Key 2)	• SDI OUT D is the matching Key channel for SDI OUT B. • When the OnBoardCompositor firmware option is installed, SDI OUT C & D become dedicated Key channels.

Audio Input/Output Channels

The Vertigo XG supports both embedded and discrete audio channels. Each video input/output can contain up to 8 stereo pairs (16 channels) of embedded audio.

The number of discrete audio input/output channels depends on the number of physical inputs available. For each physical input available there will be a discrete audio breakout cable (see figure 2-5). Each discrete audio breakout cable contains 2 XLR inputs and 4 XLR outputs. Each XLR connector represents 1 stereo pair (2 channels) of digital AES/EBU audio. Therefore, each discrete audio breakout cable contains 2 stereo pairs (4 channels) of input and 4 stereo pairs (8 channels) of output.

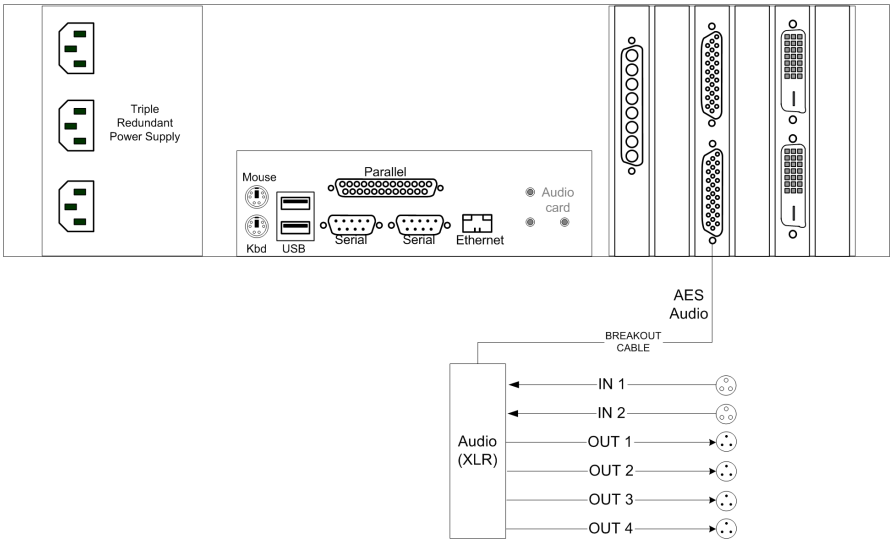


Figure 2-5. Wiring configuration for the Vertigo XG

When capturing audio, the Vertigo XG must choose between the embedded audio or the discrete audio as a source. Both sources cannot be captured simultaneously. However, the Vertigo XG can broadcast the same audio signal simultaneously on both the embedded and the discrete audio outputs.

The Vertigo XG performs one-to-one passthrough of audio. All captured audio will be broadcast on the corresponding outputs. For example, if the first 2 stereo pairs of embedded audio on SDI IN A are captured, then the signal will be output as the first 2 stereo pairs of embedded audio on SDI OUT A and simultaneously on XLR outputs 1 & 2.

☑ NOTE

The hardware bypass, in the case of power failure or system crash, does not include the discrete AES/EBU channels.

Ancillary Data Processing

The Vertigo XG reserves some hardware functionality for the extraction, processing, and insertion of ancillary data into the output video signal, for example, Vertical Ancillary (VAnc) data and Vertical Blanking Interval (VBI) data.

The ancillary data space can be used as a transport mechanism for data to be extracted by the Vertigo XG for triggering keyers, squeezes (DVEs) or other graphics events. Metadata embedded upstream of the Vertigo XG is extracted and processed by the control application to control these actions.

Graphics Processing

The Vertigo XG is a multi-layered graphics engine that supports loading of multiple graphics scenes on independently-controlled, dynamic layers. The number of layers to be controlled is defined in the control application (Xplay, Xplay Pro, or Xpanel).

Figure 2-6. The Vertigo XG supports the production of multi-layered graphics

The engine supports a large number of graphics objects, including input video, images, clips, cel animations, text, crawls, rolls, all within a single graphics layer. Graphics output is created by positioning objects within a graphics scene using the authoring tool set, and loading the scene onto the Vertigo XG.

Digital video effects (DVEs) are created, loaded, and controlled as standard graphics. The video object supports a wide variety of integrated transitions, as well as a full animation timeline to create custom moves.

The Vertigo XG can be configured for fill + key SDI video outputs, where the keying of graphics over video is handled externally, or can composite together the final output internally, outputting the complete signal. The Vertigo XG also supports hardware and software bypasses for video inputs in the case of power loss and hardware or software failure.

Media Storage

The Vertigo XG's chassis has seven SCSI drive bays that can be fitted with additional drives to expand the device's storage capacity. Two types of hardware (RAID-1 and RAID-5) are used for onboard storage of media like clips, images, and animations.

The table below demonstrates that some Vertigo XG offers versatile storage options using RAID-1 drives to provide up to 146 GB or 300 GB of storage, as well as using RAID-5 drives in the chassis' expandable drive slots to extend the Vertigo XG's storage capacity from 146 GB to 1.8 TB.

Product code	Description	Number of drives
VX-146-L1	146 GB RAID-1 storage	2 x 146 GB
VX-300-L1	300 GB RAID-1 storage	2 x 300 GB
VX-146-L5-XG	146 GB RAID-5 storage	3 x 73 GB
VX-300-L5-XG	300 GB RAID-5 storage	3 x 146 GB
VX-600-L5-XG	600 GB RAID-5 storage	3 x 300 GB
VX-600P-L5-XG	600 GB RAID-5 storage	5 x 146 GB
VX-900-L5-XG	900 GB RAID-5 storage	4 x 300 GB
VX-1200-L5-XG	1.2 TB RAID-5 storage	5 x 300 GB
VX-1500-L5-XG	1.5 TB RAID-5 storage	6 x 300 GB
VX-1800-L5-XG	1.8 TB RAID-5 storage	7 x 300 GB

☑ NOTE

When upgrading storage capacity, you cannot mix disk sizes within the same Vertigo XG device. In other words, a device that has 146 GB drives can only upgrade using additional 146 GB drives, not 300 GB drives.

Clip Player

The Vertigo XG offers a video/audio clip player option that can output clips simultaneously. It is ideal for the playout of full screen or partial screen clips, and the player supports MPEG2 broadcast codecs.

The table below demonstrates that when the clip player is used with the expandable RAID storage options, the Vertigo XG allows for the storage of up to 600 hours of clips in multiple formats.

Mbps	Clip storage with different storage options (hours)						
	146 GB	300 GB	600 GB	900 GB	1200 GB	1500 GB	1800 GB
10	30	60	120	180	240	300	360
35	8	16	32	48	64	80	96
50	6	12	24	36	48	60	72
100	3	6	12	18	24	30	36

Also see "Vertigo XG Recommended Media Formats" on page 1-7 for recommendations regarding which media formats will ensure optimal generation and playback.

3 VERTIGOXG AND RENDERER WINDOWS

The main function of the VertigoXG window is to allow you to load scenes to be outputted by the Vertigo XG device. The Vertigo XG can also be configured to have the VertigoXG window open simultaneously with an additional window, the Renderer, allowing you to preview the loaded scene on the host computer's monitor.

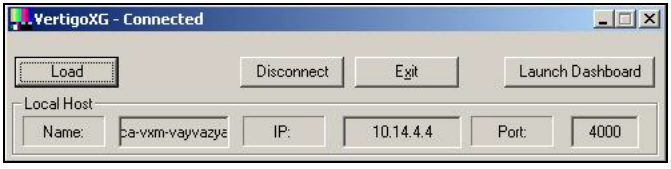


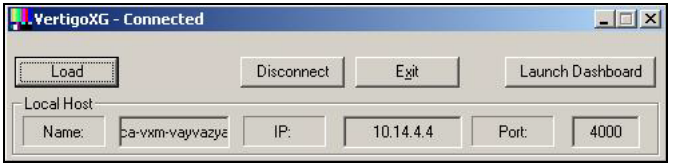
Figure 3-1. VertigoXG window

The following sections provide you with an overview of these interfaces and usage information that is relevant to configuring the Vertigo XG:

- "VertigoXG Window" on page 3-2
- "XG Renderer Window" on page 3-3

VertigoXG Window

The VertigoXG window is simple user interface that allows you to perform basic tasks for operating the Vertigo XG like, loading a scene and launching the XG Dashboard application. By default, the window will automatically open when the XG hardware is started, otherwise you can launch the window using the desktop shortcut.



☑ NOTE

The software CG application's user interface has the same look and functionality as the VertigoXG window. You can launch the software CG's window using the desktopn shortcut, or by selecting **VERTIGOXMEDIA>VERTIGOXMEDIA SOFTWARE CG** from the Windows **START>PROGRAMS** menu.

The following tables provides descriptions for each of the buttons and fields on the VertigoXG window:

LOAD button	Launches the **OPEN** dialog box, so that you can select and load a scene to the Vertigo XG. The directory that the Open dialog box opens to is set in the Publish Path parameter on the General page. The default directory location for Vertigo XG scenes is `F:\Scene`. Please see "Publish Path Coordination Guidelines" on page 1-13 for instructions about how to properly set the publish path directories. If the Live Window is enabled on the Dashboard's Live Window page, the scene will be displayed immediately in the Renderer window when loaded.
DISCONNECT	Promptly closes the connection between the XG/CG device and the application that it was actively connected to.
EXIT button	Closes the VertigoXG window.
LAUNCH DASHBOARD button	Opens the XG Dashboard, which is an application that allows you to configure the settings and behavior of Vertigo XG hardware devices (see "XG Dashboard - Vertigo XG's Configuration Software" on page 4-1).
LOCAL HOST	These read-only fields display information regarding the local host computer that is being used to run/control the Vertigo XG devices. **NAME**: Name of the host computer. **IP**: The IP address of the host computer. **PORT**: The port number that is dedicated to the Vertigo XG

XG Renderer Window

In addition to the output display, you can configure the Vertigo XG to preview the loaded scene in the Renderer window on the host computer's monitor. This is functionality is particularly useful when you would like to preview the on-air contents when performing diagnostics and debugging tasks. Note that the Renderer window is also referred to as the Live Window.

Figure 3-2. The XG Renderer window (Live Window)

You can activate, or remove, the XG Renderer window using the XG Dashboard's Live Window page's parameters. The Live Window page also allows you to configure the appearance, size, and positioning of the window on the host computer's monitor (see "Live Window Page" on page 4-18).

Using the Dashboard's Device Settings' General Page you can also configure the Vertigo XG to display some of the device's operating information (statistics) on the Renderer display. The statistics that can be displayed are: the frame rate, video card, memory use, and timing information (Dx9, DSX, Readback). These statistics can be useful for debugging purposes.

4 XG Dashboard - Vertigo XG's Configuration Software

The XG Dashboard is an application that allows you to modify the settings and behavior of Vertigo XG hardware devices and Vertigo software CG devices. This application can target one particular XG/CG or all available XG/CGs currently running on the network. The XG Dashboard application simplifies the Vertigo XG configuration process by offering a series of pages containing the parameters that control how video and audio is rendered and output.

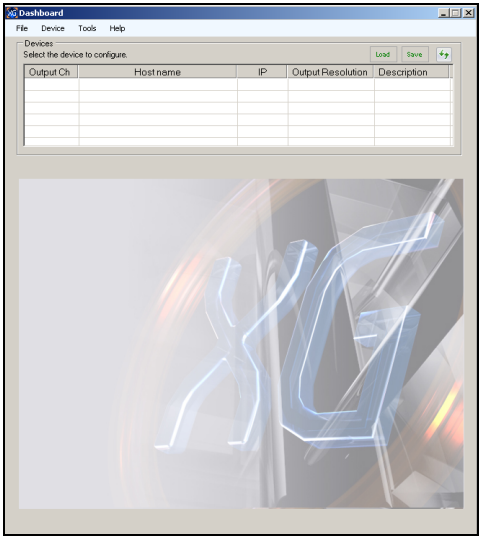


Figure 4-1. The XG Dashboard Window

The following topics further explain the function of the XG Dashboard, as well as orient you to the various parts of the XG Dashboard's interface:

- "About XG Dashboard" on page 4-2
- "XG Dashboard Window Components" on page 4-4

See "Vertigo XG Configuration Procedures and Schemas" on page 5-1 for usage information.

About XG Dashboard

The XG Dashboard is an application that allows you to modify the settings and behavior of Vertigo XG and Vertigo software CG devices. The Vertigo XG is a hardware unit that performs broadcast quality graphics rendering and playback, while the Vertigo software CG is a software-based utility for rendering and previewing broadcast graphics.

One of the first things that XG Dashboard does is perform a device discovery, which searches your local machine and/or your network for all active Vertigo XG/CG devices and then lists them on Dashboard's Device List. Using the Device Discovery Tool, Dashboard allows you to configure the device discovery's search parameters resulting in a more focused search for a particular device, or a broader search to reveal more devices. See "Device Discovery Tool" on page 4-36 for more details.

Once the devices are listed and active in the device table, you can select a device from the list, which activates a series of device configuration tabs and pages in the lower portion of the Dashboard interface.

The General Information Tab is the first to be displayed and creates a read-only profile about the selected device and its system, which can be useful information when troubleshooting.

The Device Settings Tab and Pages provide access to a series of eight (8) pages that display the parameters and settings for the selected device. One thing to note is that the seventh page is dynamic, meaning that when the selected device is a hardware XG the seventh page is entitled "Hardware Settings", but when the selected device is a software CG the seventh page is entitled "AV Input".

A description of each page and their parameters/settings is provided in "Device Settings Tab and Pages" on page 4-12. The descriptions generally state what the parameter is and informs you of what should be taken into consideration when changing the default settings.

By selecting the various pages, you can edit the device's settings to build your desired configuration, and then apply the changes to the device (see "Device Settings Tab Buttons" on page 4-13).

Consult the following sections of this document for further details and instructions on using the XG Dashboard application to configure and monitor Vertigo XG devices:

- "Starting the XG Dashboard" on page 4-3
- "XG Dashboard Window Components" on page 4-4
- "Getting Started - Preliminary Configuration Procedures" on page 5-2
- "Quick Reference - Vertigo XG Configuration Schemas" on page 5-24

Starting the XG Dashboard

The XG Dashboard application can be started by clicking the **LAUNCH DASHBOARD** button on the Vertigo Hardware XG window.

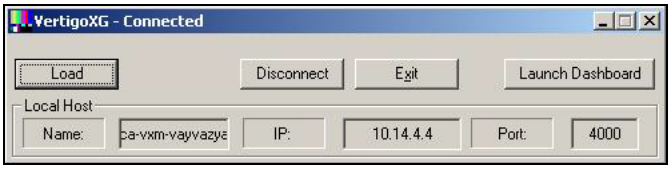


Figure 4-2. Click the **LAUNCH DASHBOARD** button to start the XG Dashboard

Alternatively, the XG Dashboard application can also be started independently by:

- opening the **`Dashboard.exe`** file stored in the following directory on the host computer: C:\Program Files\VertigoXmedia\Apps\VertigoCG2

Or,

- clicking the Vertigo XG task bar icon and select the **LAUNCH DASHBOARD** command.

XG Dashboard Window Components

The XG Dashboard is a graphical interface that consists of a series of pages containing the parameters and settings for the Vertigo XG and software CG devices found on your local machine and/or on the network.

Figure 4-3 and the following sections describe the various components that make up the XG Dashboard's interface:

- "XG Dashboard Menus and Buttons" on page 4-5
- "Device List" on page 4-7
- "General Information Tab" on page 4-10
- "Device Settings Tab and Pages" on page 4-12
- "Device Discovery Tool" on page 4-36
- "Audio Mixing Profiles Dialog Box" on page 4-39

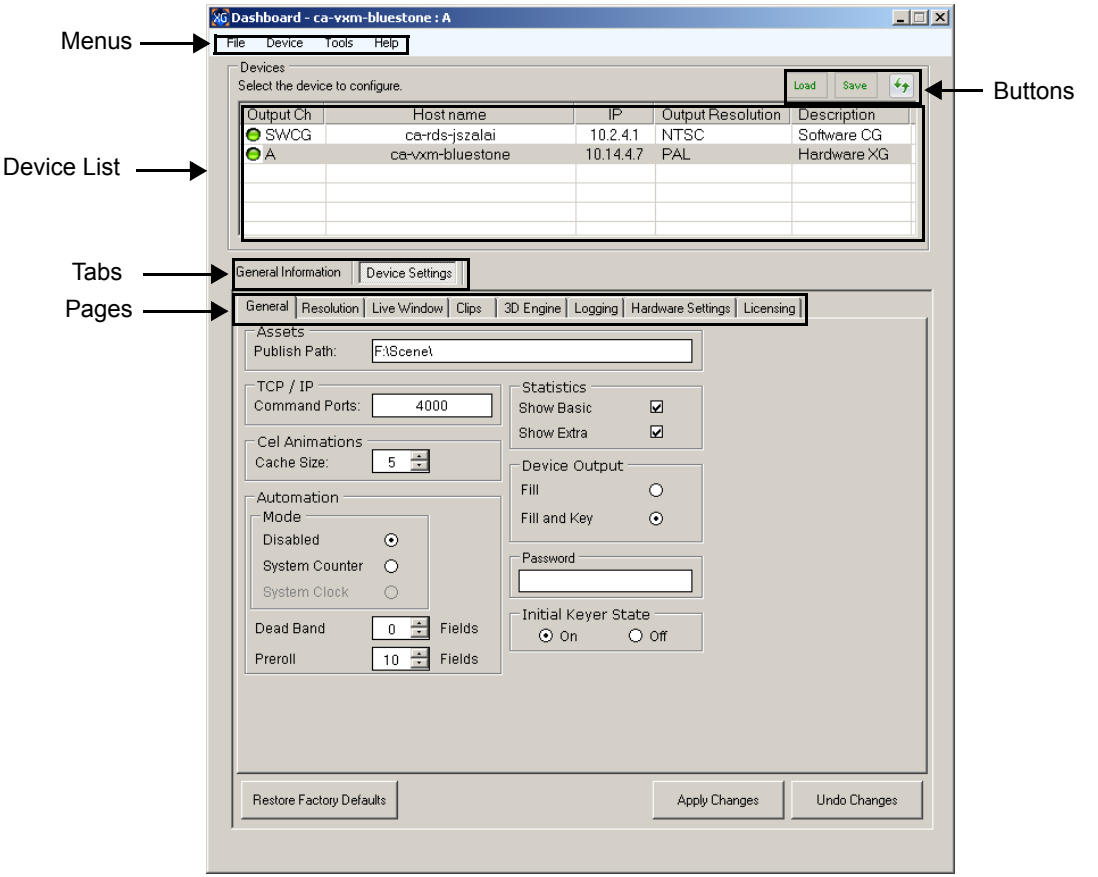


Figure 4-3. XG Dashboard window components

XG Dashboard Menus and Buttons

The following tables describe the XG Dashboard menu commands and the actions that they perform:

- File Menu
- Device Menu
- Tools Menu
- Help Menu

File Menu

LOAD DEVICE LIST	 Clears the Device List and repopulates it using the saved list of devices stored on disk from a previous session. When XG Dashboard starts up, it automatically performs a load to populate the device list. If the saved device list is empty, Dashboard performs a scan to detect any new devices. Note that this is the same type of scan action as clicking the refresh button.
SAVE DEVICE LIST	 Saves all the devices already in the Device List to a file on the disk, so that Dashboard avoids having to detect devices every time it is run. See also the EXIT command and "SAVE DEVICE LIST ON EXIT" on page 4-37.
EXIT	Closes the XG Dashboard application. The first time you exit Dashboard, the **AUTO-SAVE ON EXIT** dialog box appears before the application closes and asks you if you want to automatically save the device list. Click **YES** to save the device list and close Dashboard, or **NO** to simply close XG Dashboard. During subsequent exits the Auto-Save on Exit dialog box will not appear. If you would like to save the device list, however, you can use the File menu's "**SAVE DEVICE LIST**" command, or select "**SAVE LIST ON EXIT**" on the Device Discovery Tool.

Device Menu

Refresh Device List	 Updates the Device List by launching a search for available Vertigo XG and software CG devices using the Device Discovery settings specified in the Device Discovery Tool dialog box.
Restart Device	Restarts the Vertigo XG or software CG device that is selected in the Device List. The device may need to be restarted to have certain settings take effect when you are configuring the device. When these settings are changed, Dashboard automatically prompts you with a dialog box asking if you want to restart the device immediately when the settings are changed. If you would rather restart the device at a later time, refuse Dashboard's request and use the Restart Device command later when you are ready to restart the device.
Monitor Device Status	When selected, it will poll all the devices in the Device List to see if the status has changed. For example, active devices have become inactive, or inactive devices have become active. Note that the interval between polling can be changed using the **Refresh Rate** parameter on Device Discovery Tool.

Tools Menu

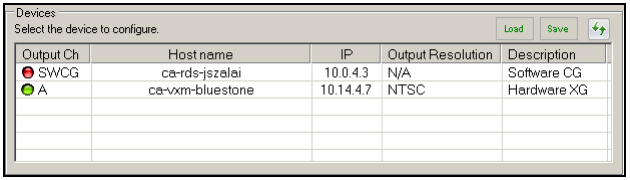
Settings > Device Discovery	Opens the Device Discovery Tool, which is used to set the method that will be used to detect available devices, whether they are local or remote (on the network).

Help Menu

Opens the About XG Dashboard dialog box, which displays the XG Dashboard product information, including the version number.

Device List

The Device List identifies the Vertigo XG and software CG devices that were found on the host machine (local) and/or on the network when a device discovery search is performed.



Selecting the device's row from the list activates a series of device configuration tabs/pages in the lower portion of the XG Dashboard interface. It is within these pages that you can configure the device by editing its parameter settings.

The following table provides a description for each of the fields in the Device List and the topics listed below describe the tasks that you can perform regarding the device table.

- "Loading and refreshing the device list" on page 4-8
- "Saving the device list" on page 4-8
- "Restarting a device in the device list" on page 4-9
- "Monitoring the status of a device" on page 4-9
- "Removing a device from the device list" on page 4-9

OUTPUT CHANNEL	Displays the name of the output channel for the Vertigo XG hardware device. Typically, this is A or B. If the device is a Vertigo software CG , this field always displays "SWCG" as the output channel. A green or red light is displayed next to the output channel name, which indicates the state of the device. The green light indicates that the device is active, connected to XG Dashboard, and ready to accept commands. The red light indicates that the device is not active and no connection has been established by XG Dashboard. Therefore, you need to start the device and connect it to XG Dashboard through the host computer or the network. See "Press the APPLY CHANGES button." on page 5-22.
HOST NAME	Displays the name of the host computer.
IP	Displays the IP address of the device.
OUTPUT RESOLUTION	Displays the setting of the output rendering resolution as specified on the Resolution Page.
DESCRIPTION	Displays whether the device is a Software CG (Software-based rendering and preview application) or a hardware XG (hardware-based renderer and production device).

Loading and refreshing the device list

The mechanism used to find and list devices on to the Dashboard Device List is a tool called the Device Discovery Tool. As described on page page 4-36, the Device Discovery tool allows you to select between two methods of searching for Vertigo XG/CG devices: automatic or manual.

Upon starting, Dashboard automatically begins a device discovery to locate the available Vertigo XG/CG devices and then lists them on the Dashboard's Device List.

You can set the method used during the device discovery anytime, by accessing the Device Discovery tool from the **TOOLS > SETTINGS** menu.

Use the Device menu's **REFRESH DEVICE LIST** command, or the **REFRESH** button , to update the device list at anytime. This action starts a device discovery that scans the local machine and/or network and updates the status of the devices already listed and adds any newly found devices.

Devices that are actively connected and ready to be used with Dashboard are indicated in the Device List with a green light next to their name, while inactive devices have a red light. When a device discovery is performed and the list is refreshed, the status of the listed devices is also updated. An inactive device means that it is not in communication with Dashboard, perhaps because the device is turned off, it has crashed, or the network is down. If the device has crashed, you can restart it using Dashboard's **RESTART DEVICE** command (see "Restarting a device in the device list" on page 4-9). When the device is active again, performing a refresh of the device list will return its status to a green light.

Saving the device list

Upon starting, Dashboard automatically begins a device discovery to locate the available Vertigo XG/CG devices and then lists them on the Dashboard's Device List. This initial device list can be saved, so that the next time Dashboard performs a device discovery (refresh), it only has to update the status of the listed devices rather than searching for them again.

Use the File menu's **SAVE DEVICE LIST** command, or the **SAVE** button, to save the device list. If you do not save the device list before exiting Dashboard, the application asks you if you would like to save the device list before exiting. This prompt only happens the first time you exit Dashboard after installation.

As an alternative to manually saving the device list, you can use the Device Discovery tool's **AUTO-SAVE DEVICE LIST ON EXIT** parameter to automatically save the device list when you exit the Dashboard application.

Restarting a device in the device list

During configuration, there are some device parameters that require that the Vertigo XG be restarted before the new settings can take effect. When these settings are changed, Dashboard automatically prompts you with a dialog box asking if you want to restart the device immediately. If you would rather restart the device at a later time, decline Dashboard's request and use the Device menu's **RESTART DEVICE** command when you are ready to restart the device.

Another use for the Restart Device command is to re-activate a device from the Device List that has become inactive (red light) because the device crashed. The **RESTART DEVICE** command performs a remote restart of the device, which may resolve the issue and return the device to an active state (green light) after performing a refresh of the device list.

Monitoring the status of a device

The status of a Vertigo XG device is reported in the Device List by a green (active) or red (inactive) light next to its name. You can monitor the status of a device by activating the Device menu's **MONITOR DEVICE STATUS** command, which uses the **REFRESH RATE** setting on the Device Discovery tool to determine at what frequency to update the device's status on the device list.

To monitor the status of a Vertigo XG device listed in the Dashboard Device List:

1. Select the device in the Device List.
2. Launch the Device Discover tool by selecting **TOOLS > SETTINGS > DEVICE DISCOVERY**.
3. Set the Device Monitoring's Refresh Rate parameter to the desired frequency interval. For example, a setting of 10, checks the status every 10 seconds.
4. Click **OK**.
5. Select the **MONITOR DEVICE STATUS** command in the **DEVICE** menu.

Removing a device from the device list

If the device list has previously been saved, it will list all of the Vertigo XG/CG devices found and updated from the previous device discovery, including Vertigo XG/CG devices that are active, inactive, local, and/or networked.

There may be times when you want to limit the devices displayed in the device list to a particular few. If this is the case, you can tailor the device list by removing any unwanted devices from the device list.

To remove a device from the device list:

1. Right-click on the device in the device list that you want to remove.
2. Select the **REMOVE DEVICE** command.

General Information Tab

The General Information tab is a read-only summary of some of the device and system settings of the Vertigo XG selected in the Device List. Its main function is to gather and display information that may be relevant when operating or troubleshooting the system.

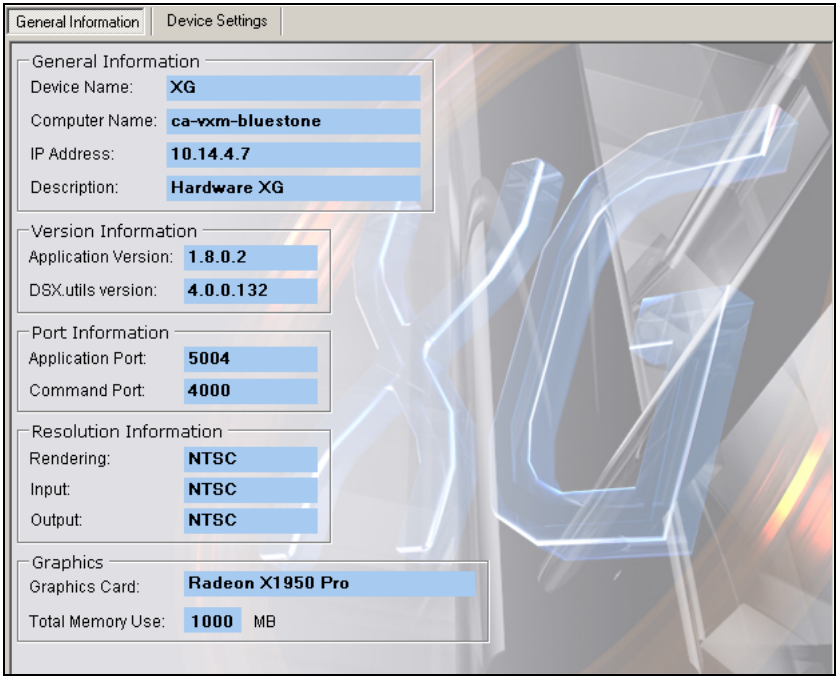


Figure 4-4. Dashboard's General Information Tab

General Information

DEVICE NAME	The name given by the last connecting application. Such as Xplay or Xstudio. This should correspond to the name that is typically the XMS name. Currently, the name defaults to XG.
COMPUTER NAME	Displays the name of the host computer.
IP ADDRESS	Displays the IP address of the selected Vertigo XG device.
DESCRIPTION	Displays whether the device is a Software CG (Vertigo Software CG) or a hardware XG (Vertigo XG).

Version Information

Application Version	Displays the version of XG/CG device.
DSX.utils version	Displays the version of the driver used inside the Vertigo XG device. (Hardware XG only)

Port Information

Application Port	Displays the communication port used between the XG Dashboard application and the selected Vertigo XG/CG device.
Command Port	The communications port used by the Vertigo XG/CG for command and control by applications, such as Xstudio or Xplay. To edit this setting, select the Display Settings Tab and edit the Command Port field.

Resolution Information

Rendering	Displays the resolution format that is used for processing within the Vertigo XG/CG. To edit this setting, select the Resolution Page from the Device Settings tab and edit the Rendering Resolution parameter.
Input	Displays the resolution format of the video data coming into the Vertigo XG. This field does not apply to VertigoCG devices. To edit this setting, select the Resolution Page from the Device Settings tab and edit the Input Resolution field.
Output	Displays the resolution format of the video data being outputted from the Vertigo XG/CG. This field does not apply to Vertigo Software CG devices. To edit this setting, select the Resolution Page from the Device Settings tab and edit the Output Resolution field.

Graphics

Graphics Card	Identifies the type of graphics card used by the Vertigo XG hardware or the Vertigo Software CG. This information is useful when troubleshooting the Vertigo XG as some functionality might depend upon the type of graphics card used.
Total Memory Use	Displays the total amount of memory being used by the graphics card, including host and onboard.

Device Settings Tab and Pages

Selecting the Device Settings tab provides access to a series of eight (8) pages that display the parameters and settings for the selected device. Note that the seventh page is dynamic, meaning that when the selected device is a hardware XG the seventh page is entitled "Hardware Settings", but when the selected device is a software CG the seventh page is entitled "AV Input".

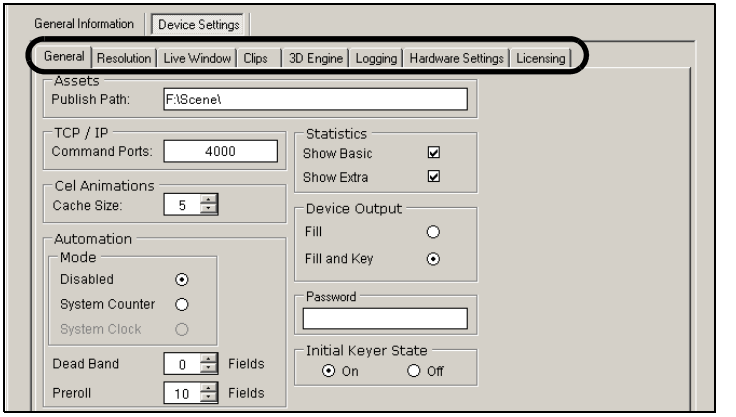


Figure 4-5. Selecting the Device Settings tab exposes its pages

The following topics describes each of the settings on the Device Settings tab and its pages:

- "Device Settings Tab Buttons" on page 4-13
- "General Page" on page 4-14
- "Resolution Page" on page 4-16
- "Live Window Page" on page 4-18
- "Clips Page" on page 4-20
- "3D Engine Page" on page 4-22
- "Logging Page" on page 4-24
- "AV Input Page" on page 4-26
- "Licensing Page" on page 4-27
- "Genlock Page" on page 4-28
- "Video Page" on page 4-31
- "Audio Page" on page 4-33
- "Watch Dog Page" on page 4-35

Device Settings Tab Buttons

By selecting the various pages, you can edit the settings to build your desired configuration, and then apply the changes to the device. Note that for some changes to take effect, Dashboard will request that the device be restarted (see "RESTART DEVICE" on page 4-6).

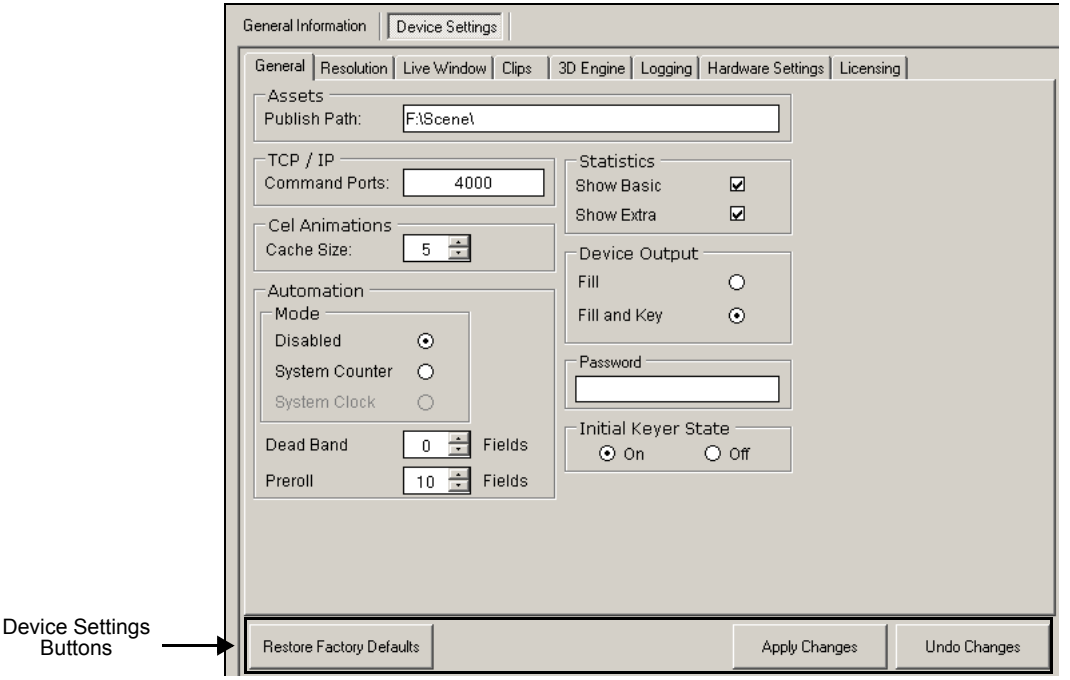


Figure 4-6. Device Settings tab's buttons

You can retract the changes that you make to the device settings by performing an **UNDO**, as long as you haven't already applied the changes. If you have made unwanted changes, you can revert to the device's default settings by pressing the **RESTORE FACTORY DEFAULTS** button. These actions are performed by using the following buttons located in the lower portion of the XG Dashboard window when the Device Settings tab is selected.

RESTORE FACTORY DEFAULTS	Resets all of the parameter settings to XG Dashboard default settings.
APPLY CHANGES	Applies all of the new settings from the page to the selected device.
UNDO CHANGES	Reinstates the page's device settings back to what they were at the last "Apply Changes" action.

General Page

The General page (figure 4-7) provides you with access to a series of miscellaneous device parameters, including storage settings and communication settings between the Vertigo XG/CG, Xplay, and/or the broadcast monitor.

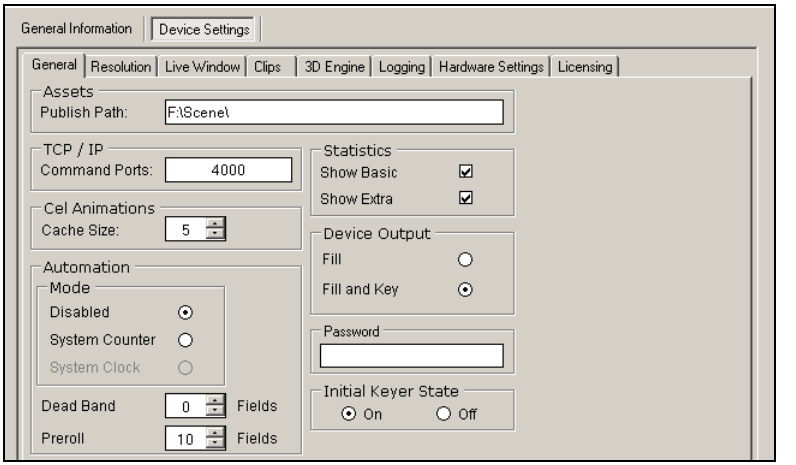


Figure 4-7. Device Settings's General Page on the XG Dashboard Window

ASSETS	**PUBLISH PATH**: Identifies the directory location where assets are stored on the Vertigo XG, or on the host computer (software CG). The default directory paths for the Vertigo XG is `F\:Scene\`, while the default directory path for the Vertigo Software CG is `C\:Scene\`. Assets are automatically placed within appropriate subfolders by the publish agent. For example, images are stored in the Image subfolder. Please see "Publish Path Coordination Guidelines" on page 1-13 for instructions about how to properly set the publish path directories.
TCP/IP	**COMMAND PORTS**: Sets the communications port used by the Vertigo XG and Vertigo software CG for command and control between applications (i.e. Vertigo XG/CG and Xplay). This port must be open and 2-way unblocked on the Vertigo XG subnet.
CEL ANIMATIONS	**CACHE SIZE:** Sets the number of cel animations that are cached in system memory after they are no longer referenced by a loaded scene. The default is 5. Increasing the cache size setting will unnecessarily slow down performance and occupy memory space.

AUTOMATION	**MODE**: Determines the timestamping mechanism used for commands between the Vertigo XG and Xplay. • **DISABLED**: When selected the timestamp of the command will be ignored and the command is executed immediately. • **SYSTEM COUNTER**: High performance counter issued to reference the time of the command. • **SYSTEM CLOCK**: Sets the format of the timestamps, which is timecode-based (Hour: Minute: Seconds: Frames). **DEAD BAND**: Sets the dead band zone for the time stamping of commands. If the difference in timestamps between multiple commands is less than the dead band, the earlier timestamp will be use for all commands. **PREROLL**: Sets the preroll time by which all timestamps are adjusted.
STATISTICS	**SHOW BASIC**: Displays the frame rate, video card, and memory use on the output display for debugging purposes. **SHOW EXTRA**: Displays timing information (Dx9, DSX, Readback) on the Vertigo XG's output display for debugging purposes. Timing values are displayed in milliseconds for each thread. This parameter does not apply to the Vertigo Software CG. Please see "Enable/Display Statistics on the broadcast monitor" on page 5-12 for instructions on displaying statistics.
DEVICE OUTPUT	**FILL**: Only the fill signal will be transmitted to the output monitor. **FILL AND KEY**: The fill and key signals will be transmitted to the output monitor. This setting is the default. Please see "Verifying the Device Output Settings" on page 5-16 for instructions on setting the Fill or Fill & Key settings.
PASSWORD	A simple security feature that allows you to set a password so that other users cannot change the device settings.
INITIAL KEYER STATE	Sets the initial state of the Vertigo XG/CG internal virtual keyer list. **ON**: Sets the Vertigo XG/CG's keyer to an active state. This is the default setting. **OFF**: Sets the Vertigo XG/CG's keyer to an inactive state.

Resolution Page

The Resolution page (figure 4-8) provides access to the device parameters that set the input, rendering, and output resolution of the video data.

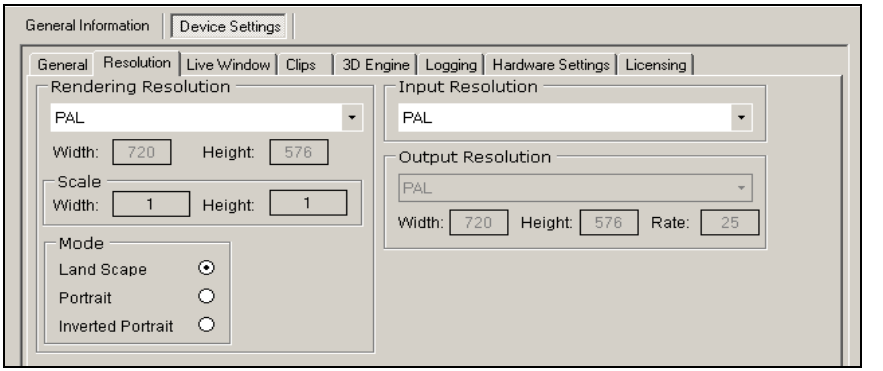


Figure 4-8. Device Settings's Resolution page on the XG Dashboard window

RENDERING RESOLUTION	Based upon the output resolution format selected, the rendering resolution field allows you to select the internal processing resolution of the Vertigo XG or software CG device from a drop-down list. The display window of the software CG resizes to the resolution dimensions chosen. Possible values are: • **NTSC**: Sets the rendering resolution to NTSC format (720 x 486) Rate: 29.97 • **NTSC_WIDE**: Sets the rendering resolution to NTSC-Wide format (800 x 486) Rate: 29.97 • **PAL**: Sets the rendering resolution to PAL format (720 x 576) Rate: 25 • **PAL_WIDE**: Sets the rendering resolution to PAL-Wide format (800 x 576) Rate: 25 • **720P60**: Sets the rendering resolution to 720p60 format (1280 x 720) Rate: 60 • **720P60M**: Sets the rendering resolution to 720p60M format (1280 x 720) Rate: 59.97 • **1080I25**: Sets the rendering resolution to 1080i25 format (1920 x 1080) Rate: 25 • **1080I30M**: Sets the rendering resolution to 1080i30M format (1920 x 1080) Rate: 29.97 • **1080I30**:Sets the rendering resolution to 1080i30 format (1920 x 1080) Rate: 30 • **1080I24M**: Sets the rendering resolution to 1080i24m format (1920 x 1080) Rate: 23.98

Rendering Resolution - continued.	• **1080p24**:Sets the rendering resolution to 1080p24 format (1920 x 1080) Rate: 24 • **1080p25**:Sets the rendering resolution to 1080p25 format (1920 x 1080) Rate: 25 • **1080p30M**: Sets the rendering resolution to 1080p30m format (1920 x 1080) Rate: 29.97 • **1080p30**:Sets the rendering resolution to 1080p30 format (1920 x 1080) Rate: 30 • **CUSTOM**: Sets the rendering resolution to the resolution values set in the rendering resolution width, height, and rate fields. This setting is only available to Software CG devices. **Width and Height**: Shows the width (horizontal lines) and the height (vertical lines) of the rendering resolution selected. These fields are read-only, unless the Rendering Resolution parameter is set to **Custom**, in which case the values can be edited manually. Note, however, that the Custom setting is only available to Software CG devices. The width and height rendering values for Vertigo XG devices are determined by the resolution format selected. **Scale**: This read-only field shows the **Width** & **Height** ratios between the rendering resolution setting and the Output resolution setting. **Mode**: Sets the orientation of the output. • **Land Scape**: Displays the output with the long edge of the frame at the top of the display. • **Portrait**: Displays the output with the short edge of the frame at the top of the page. • **Inverted Portrait**: Displays the output with the short edge of the frame at the top of the page and the graphics inverted (left goes to right, right goes to left).
Input Resolution	This parameter is only available to Vertigo XG devices. The Input Resolution parameter allows you to select the input resolution of the video data prior to processing by Vertigo XG. Select a resolution format from the drop-down list of preset formats that are compatible with the rendering resolution.
Output Resolution	The Output Resolution parameter allows you to specify the output resolution of the Vertigo XG and Software CG. **Width**, **Height, & Rate**: Displays the width (horizontal lines), height (vertical lines), and frame rate of the output resolution selected. These fields are read-only, except when CUSTOM is selected as the Output Resolution. Note, however, that the Custom setting is only available to Software CG devices. The width, height, and rate rendering values for Vertigo XG devices are determined by the resolution format selected.

Live Window Page

In addition to the output display, the Live Window page provides you with parameters for enabling an additional display of a window on the computer monitor (Live Window or VertigoXG Renderer) that shows the output of the Vertigo XG/CG.

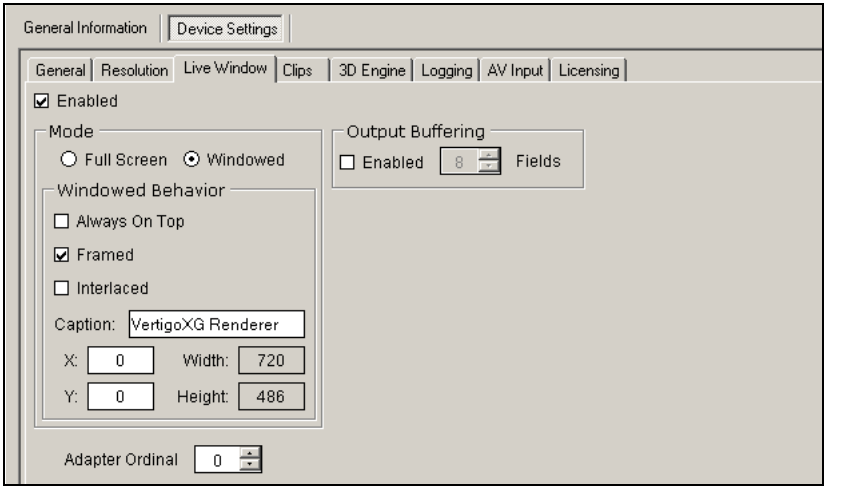


Figure 4-9. Device Settings's Live Window page on the XG Dashboard window

ENABLED	Enables the display of the Live Window. In the case of the VertigoCG, the Live Window is the only method of seeing the output. Please see "Enabling the Live Window" on page 5-15 for instructions on enabling and displaying statistics on the Live Window.
MODE	Selecting **ENABLED**, activates the following parameters allowing you to set the size and positioning of the Live Window. **FULL SCREEN**: Sets the Live Window to occupy the entire display area, and therefore, replaces the output display. **WINDOWED**: Sets the Live Window to display in a separate window. Selecting this setting activates the Window Behavior parameters that allow you to set the positioning and size of the Live Window. **WINDOW BEHAVIOR**: The following parameters are activated when Windowed is selected, and they allow you to set the positioning and size of the Live Window. • **ALWAYS ON TOP**: Specifies whether the Live Windows is always the top window. • **FRAMED**: Enables a frame around the Live Window.

Mode - continued	• **INTERLACED**: Determines if the window is the height of a field (checked) or the height of a frame (unchecked). This setting has no effect if the output resolution is progressive, since there are only frame, no fields, in progressive. • **CAPTION**: Allows the override of the default Live Window caption (title). • **X**: Specifies the vertical screen coordinate of the top left corner of the Live Window. A value of zero (0) locates the window in the upper-most corner of the screen. • **Y**: Specifies the horizontal screen coordinate of the top left corner of the Live Window. A value of zero (0) locates the window in the left-most corner of the screen. • **WIDTH & HEIGHT**: Displays the size of the Live Window by setting the vertical and horizontal dimensions in pixels. These are read-only fields and match the values specified by the Output Resolution field on the Resolution Page.
ADAPTER ORDINAL	Specifies which VGA display adapter to use for rendering. Note that displaying the Live Window on the incorrect VGA display will unnecessarily increase CPU usage.
OUTPUT BUFFERING	When **ENABLED** is selected, the software CG renders into buffers and then the buffers will be presented to the Live Window at the correct frame rate. Specify the number of fields to buffer in the **FIELDS** parameter. These parameters are only visible/available when configuring a software CG, not a hardware XG.

Clips Page

The parameters on the Clips page allow you to set clip rendering characteristics.

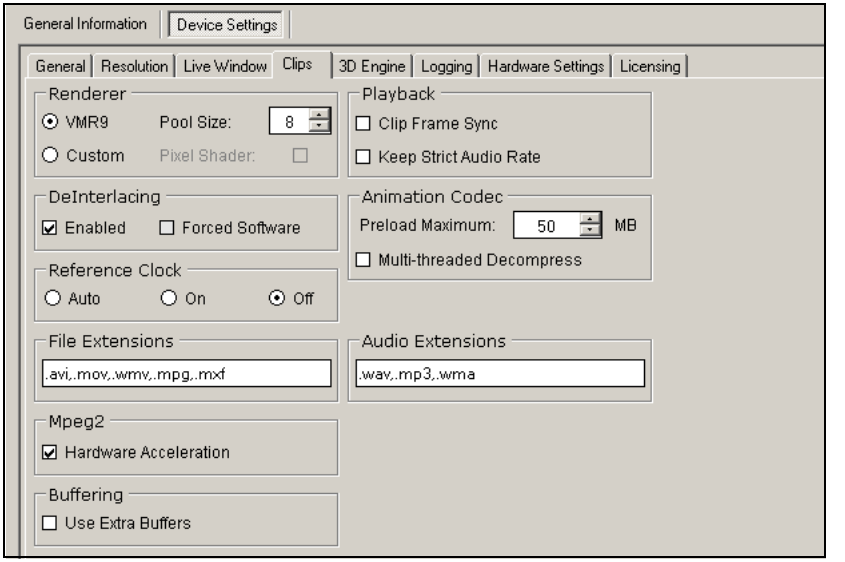


Figure 4-10. Device Settings's Clips page on the XG Dashboard window

RENDERER	The following fields specifies which renderer will be used to produce and insert the graphics and video clips for output. **VMR9**: Specifies that the VMR9 (Video Mixing Renderer 9) will be used for clip playback. This is the default renderer. **POOL SIZE**: Only available when VMR9 is selected as the renderer. Pool Size specifies the number of VMR9s that are preallocated at the start up of the application. The default value of -1 disables the preallocation. **CUSTOM**: Specifies that the Vertigo XG's own video renderer will be used for clip playback. **PIXEL SHADER**: Only available when CUSTOM is selected as the renderer. Selecting Pixel Shader allows pixel color conversion to be done on the Vertigo XG's GPU. When Pixel Shader is not selected, pixel color conversion is performed on the host computer.
DEINTERLACING	The renderers processing format is interlaced, but all of the other functions are performed in progressive. **ENABLED**: The Vertigo XG/CG will deinterlace clips using the best method available. This is the default setting. **FORCED SOFTWARE**: The Vertigo XG/CG will use the Vertigo's own deinterlacing algorithm.

Reference Clock	**Auto**: Specifies that the clip rendering will be clocked. **On**: Specifies that the clock will always be used in clip rendering. **Off**: Specifies that the clock will not be used in clip rendering.
File Extensions	Specifies the extensions of clip formats that are supported. Although the more commonly used formats are already listed in this field, you can also add additional clip format extensions to the list. Please read "Vertigo XG Recommended Media Formats" on page 1-7 before editing the list. An example of when a new file extension might need to be add to the list is if a new H.264 codec is installed. In such a case the extension .264 may be added so that the file can be rendered.
Audio Extensions	Specifies the extensions of audio formats that are supported. Although the more commonly used formats are already listed in this field, you can also add additional audio format extensions to the list. Please read "Vertigo XG Recommended Media Formats" on page 1-7 before editing the list.
Mpeg2	**Hardware Acceleration**: When selected, Mpeg-2 decoding is performed using the Vertigo XG's GPU. When this parameter is not selected, Mpeg-2 decoding is performed by the CPU. This parameter is selected in its default state.
Buffering	**Use extra Buffers**: When selected, extra buffers are used between the clip engine and the rendering engine (output engine). This parameter is not selected in its default state.
Playback	The following parameters are only displayed on the Clips page when a Vertigo XG device is selected in the device list. **Clip Frame Synch**: Forces clips to remain synchronized with the start of frames. **Keep Strict Audio Rate**: Only allows 48 kHz audio to be used in clip playback.
Animation Codec	**Preload maximum**: Specifies the maximum size (MB) of a file that will be preloaded into system memory. All files smaller will be loaded into system memory for playback and all files larger will be streamed off disk. The valid range is 50 to 500. **Multi-threaded Decompression**:Determines if the decompression of the Vertigo animation clips is multi-threaded or single-threaded.

3D Engine Page

The 3D Engine page provides access to parameters that allow you to set some parameters that affect the way in which 3D graphics are rendered and output by the Vertigo XG. The following table describes each of the parameters on the 3D Engine page.

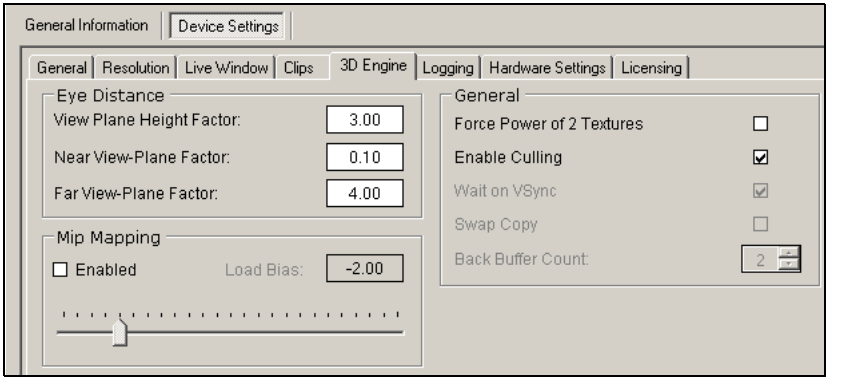


Figure 4-11. Device Settings's 3D Engine page on the XG Dashboard window

EYE DISTANCE	The Eye Distance parameters set the three dimensional positioning by defining the spatial perspective/location of how far the object is from the camera (close, far). **VIEW PLANE HEIGHT FACTOR**: Sets the field of view of the camera. **NEAR VIEW-PLANE FACTOR**: Sets the distance from the camera in world space units. Anything closer to the camera will be clipped. **FAR VIEW-PLANE FACTOR**: Sets the distance from the camera in world space units. Anything farther from the camera will be clipped.
MIP MAPPING	Mip mapping allows for a higher level of layering detail by internally creating collections of bitmap images to accompany a main texture. This is intended to increase rendering speed of 3D graphics, and improves the digital video effects (DVE) quality. **ENABLED**: When selected, the Vertigo XG performs mip mapping when rendering 3D graphics. **LOAD BIAS**: When Enabled is selected for Mip Mapping, the Load Bias parameter allows you to set the level of detail bias for mipmapping by adjusting the slider between -3 and +3. Values below 0 result in less blurred mip-level choice. The default value is -0.50.

General	**Force Power of 2 Textures**: Textures are typically square and must have side lengths equal to a power of 2. Some graphics cards do not adequately support non-power of two textures, so you can select this parameter to force the textures to conform to the power of 2 requirement. **Enable Culling**: Prevents elements of 3D graphics that are non-visible from the rendering process, thereby making the rendering process more efficient. **Wait on VSync**: This parameter is only available to the Vertigo software CG and only when the Live Window is full screen. Selecting this parameter forces the software CG to synchronize its rendering with the graphics card's vertical blanking interval (VBI). By default, this parameter is not selected. **Swap Copy**: This parameter is only available to the Vertigo software CG and only when the Live Window is full screen. Swap Copy makes overlay graphics slower by allowing buffer swaps to be performed as a copy from back to front, rather than having the back and front exchanged. These conditions allow some video cards to perform better. This parameter is not selected by default. **Back Buffer Count**: This parameter is only available to the Vertigo software CG and it is used with the Swap Copy parameter. This parameter specifies the number of back buffers to use in the Swap Copy. The default is set to 2.

Logging Page

The logging page allows you to set parameters to create log files that record the status of events while the Vertigo XG or Vertigo software CG device is running. The log files can then be use to investigate device behavior and debug.

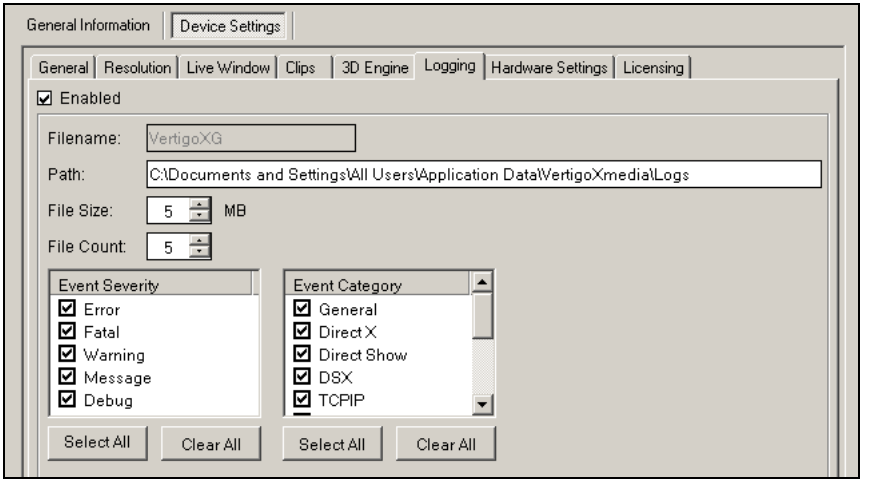


Figure 4-12. Device Settings's Logging page on the XG Dashboard window

ENABLED	When selected, the remaining logging parameters become available for creating log files to monitor and debug the Vertigo XG. This parameter is not selected in its default state.
FILENAME	The name of the log file. The name cannot be changed, however, if multiple log files are created, then an underscore, date, and time are appended to the file name. The default name is "VertigoXG".
PATH	The directory location where the log file will be saved to.
FILE SIZE	Sets the maximum memory size for each log file created per run. The default value is 5 MB.
FILE COUNT	Sets the maximum number of log files to be created per run. The default value is 5.

EVENT SEVERITY	Sets the severity categories that will be reported to the log file. • **ERROR**: An error of some type has occurred. • **FATAL**: An error has occurred that cannot be recovered from. • **WARNING**: Be aware that something unexpected has happened. • **MESSAGE**: A general message. • **DEBUG**: Information used to help debug problems. **SELECT ALL** button: Allows you to quickly select all of the severity categories to be reported in the log file. **CLEAR ALL** button: Allows you to quickly de-select all of the selected severity categories.
EVENT CATEGORY	Sets the event categories that will be reported to the log file. • **GENERAL**: General information. • **DIRECT X**: Information pertaining Direct and 3D rendering. • **DIRECT SHOW**: Information about Direct Show, which is used to play clips and audio files. • **DSX**: Information about the Matrox hardware. • **TCPIP**: Information about network communication. • **CALLBACKS**: Information about callback replies sent to applications, like Xplay or Xstudio. • **FILE ACCESS**: Information about attempts to access files on the disk. • **AUTOMATION**: Information about timestamped commands. • **FONT ENGINE**: Information about text rendering. • **ANIMATIONS**: Information about animations. • **LICENSING**: Infomation about licensing. **SELECT ALL** button: Allows you to quickly select all of the event categories to be reported in the log file. **CLEAR ALL** button: Allows you to quickly de-select all of the selected event categories.

AV Input Page

The AV Input Page is only visible when a software CG is selected in the device list.

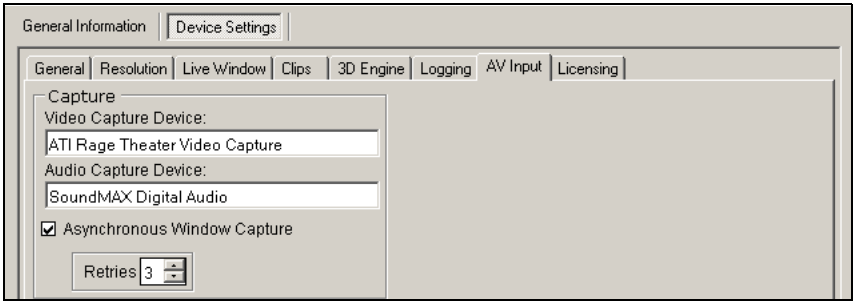


Figure 4-13. Device Settings' AV Input page on the XG Dashboard window

CAPTURE	**VIDEO CAPTURE DEVICE**: The name of the device that will perform video capture (i.e. web camera). **AUDIO CAPTURE DEVICE**: The name of the device that will perform audio capture (i.e. audio card).
ASYNCHRONOUS WINDOW CAPTURE	Selecting the Asynchronous Window capture allows a VideoIn object to track the contents of any window on the Windows desktop. This can be used to reflect web pages, and even flash applications. **RETRIES**: Sets the number of times the capture is attempted before the process is cosidered to have failed (errored out).

Licensing Page

The Device Settings' Licensing page allows you to set the XMS IP and port information that is used to retrieve and identify valid application licenses (for CG/XG), as well as clip and audio licenses (XG only).

More information about licensing is available in the following sections:

- "Licensing Information" on page 1-5
- "Phase I - License Installation and Verification" on page 5-3

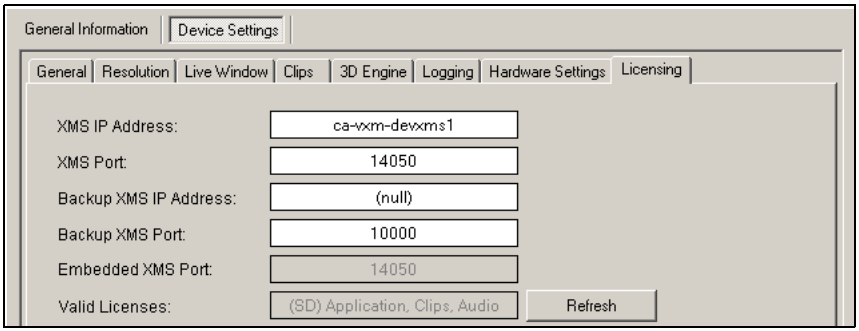


Figure 4-14. Device Settings' Licensing page on the XG Dashboard window

XMS IP Address	Sets the IP address of the primary XMS that the application will attempt to checkout licenses from.
XMS Port	Sets the port of the primary XMS that the application will attempt to connect on.
Backup XMS IP Address	Sets the IP address of the backup XMS used for licensing.
Backup XMS Port	Sets the port of the backup XMS used for licensing.
Embedded XMS Port	Sets the port the application will attempt to connect on. This is a read-only parameter.
Valid Licenses	Displays which licenses that application was able to obtain from either the primary, backup, or embedded XMS. The **Refresh** button allows the device to retry the checkout of any feature licenses that it does not yet have.

Genlock Page

The Genlock page is a sub-page of the Hardware Settings page, which is only visible when a Vertigo XG hardware device is selected in the Dashboard's device list. The Genlock page (figure 4-15) exposes parameters that allow you to set the Vertigo XG's genlock reference signal that synchronizes the phase timing eliminating video jitter.

The source of the Vertigo XG's genlock reference signal can be set to come from one of four sources: internal, blackburst, SDI Video In A, or SDI Video In B. Please see "Setting Genlock and Resolution Settings" on page 5-22 for instructions on setting the Genlock signal.

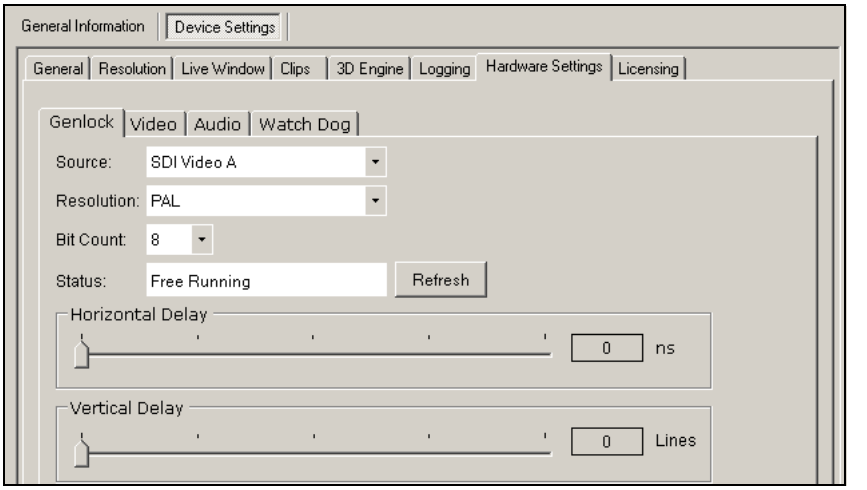


Figure 4-15. Device Settings' Genlock Page

SOURCE	The source of the Vertigo XG's genlock reference signal can come from one of four sources: • **INTERNAL**: Genlock to the X.MIO's hardware, which generates its own synchronization clock • **BLACKBURST**: The blackburst signal contains the vertical, horizontal, frame, color synchronization, and field 1 reference, without any video data. • **SDI VIDEO A**: The SDI video A input signal inherently carries a reference signal and therefore it can be used as a genlock signal. • **SDI VIDEO B**: The SDI video A input signal inherently carries a reference signal and therefore it can be used as a genlock signal.

STATUS & **REFRESH** button	Identifies the current state of the Genlock signal source that is selected in the **SOURCE** parameter. • **LOCKED**: The connection is established and the on-board Genlock is sending a clocking signal to the Genlock source specified in the Source parameter. • **FREE RUNNING**: No signal is coming in on the selected Genlock source, or the specified signal formats are not the same. For example, if the resolution setting on the Genlock page does not match the resolution formats specified on the Resolution page. • **RELOCKING**: In the process of locking. Note that if continuously in this state, the Genlock signal might not be stable and it needs to be checked. • **UNKNOWN (UPDATE THE XG SOFTWARE)**: This message appears when the version of the Vertigo XG software (VertigoXG window) that is being used is an earlier version and does not support this feature. If this is the case, you need to update the Vertigo XG software. Click the **REFRESH** button to request an update of the Genlock status of the source. Each time you select a new Genlock Source setting and apply the change, the status message will be gray until you click the Refresh button to update the status.
RESOLUTION	Specifies the resolution of the genlock signal. In cases where two instances of the Vertigo XG are running simultaneously with different resolutions, both instances should specify the lower resolution for genlock. Select one of the following resolution formats from the drop-down list: • **NTSC**: Sets the rendering resolution to NTSC format (720 x 486) • **NTSC_WIDE**: Sets the rendering resolution to NTSC-Wide format (800 x 486) • **PAL**: Sets the rendering resolution to PAL format (720 x 576) • **PAL_WIDE**: Sets the rendering resolution to PAL-Wide format (800 x 576) • **720P60**: Sets the rendering resolution to 720p60 format (1280 x 720) • **720P60M**: Sets the rendering resolution to 720p60M format (1280 x 720) • **1080I25**: Sets the rendering resolution to 1080i25 format (1920 x 1080) • **1080I30M**: Sets the rendering resolution to 1080i30M format (1920 x 1080)

Resolution - continued.	• **1080i30**:Sets the rendering resolution to 1080i30 format (1920 x 1080) • **1080i24M**: Sets the rendering resolution to 1080i24m format (1920 x 1080) • **1080p24**:Sets the rendering resolution to 1080p24 format (1920 x 1080) • **1080p25**:Sets the rendering resolution to 1080p25 format (1920 x 1080) • **1080p30M**: Sets the rendering resolution to 1080p30m format (1920 x 1080) • **1080p30**:Sets the rendering resolution to 1080p30 format (1920 x 1080)
Bit Count	Specifies the bit depth of the genlock signal. Choose either 8 (default) or 10 from the drop-down list.
Horizontal Delay	Adjusts the horizontal timing of the signal in nanoseconds.
Vertical Delay	Adjusts the vertical timing of the signal in lines.

Video Page

The Video page is a sub-page of the Hardware Settings page, which is only visible when a Vertigo XG hardware device is selected in the Dashboard's device list. The Video page (figure 4-16) exposes parameters that allow you to set the Vertigo XG's video input/output channels and video processing options.

Please see "Verifying output resolution and channel settings" on page 5-14 for instructions on setting the appropriate output channels and "Setting Genlock and Resolution Settings" on page 5-22 for instructions on setting the Fill and Key's horizontal and vertical delay settings.

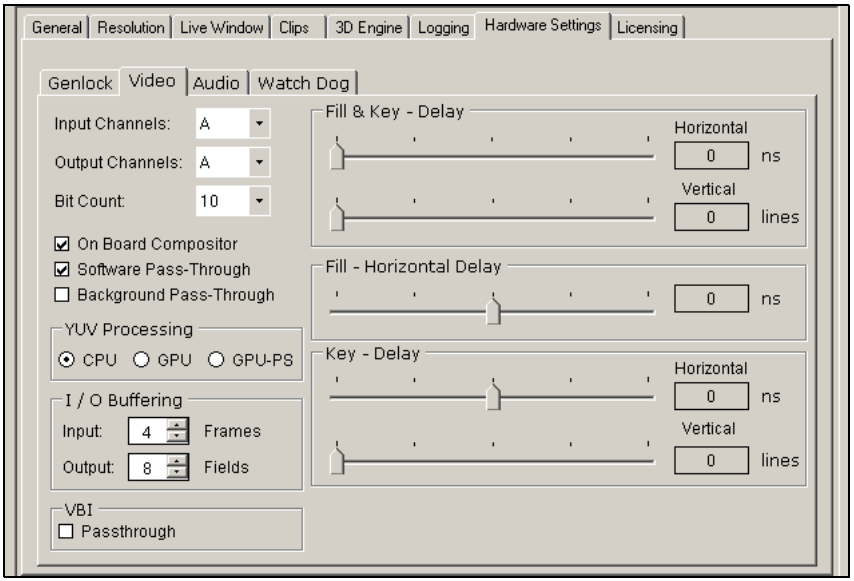


Figure 4-16. Device Settings' Video page

INPUT CHANNELS	Specifies the input channel of the hardware to use. Depending on the hardware configuration of the machine, the possible values are A and B. When running a single instance of the Vertigo XG, both sources can be used. But when running two instances of the Vertigo XG simultaneously, they must each use a different input channel. In the case where there are more instances running than input channels, some will have to leave the setting blank.

Output Channels	Specifies the output channel of the hardware to use. Depending on the hardware configuration of the machine, the possible values are A, B, C, or D. When running multiple instances of the Vertigo XG simultaneously, each instance must specify a different output channel.
Bit Count	Specifies the bit depth of the signal. Choose either 8 or 10 (default) from the drop-down list.
On Board Compositor	Allows the off loading of certain color conversion routines from the CPU to the Matrox X.mio hardware. This feature is dependant on the correct firmware options being installed on the hardware.
Software Pass-Through	Specifies whether the Vertigo XG should automatically pass through audio/video when there is no scene loaded.
YUV Processing	Specifies if color conversion of video input is off-loaded from the CPU to the GPU. • **CPU**: Use the CPU to do the conversion. • **GPU**: Use the GPU to do the conversion. The GPU is not recommended, however, for HD video. • **GPU-PS**: Uses the pixel shader to do YUV to RGB conversion.
I/O Buffering	Together these I/O buffering values determine the video delay of the passthrough. • **Input**: The number of buffered (frames) used for video input. • **Output**: The number of buffers (fields) used for video output.
VBI	• **Passthrough**: Enables the pass through of the VBI data.
Fill & Key - Delay	• **Horizontal** and **Vertical**: Adjusts the horizontal (nanoseconds) and the vertical (lines) timing of the fill and key, simultaneously.
Fill - Horizontal Delay	Adjusts the horizontal (nanoseconds) timing of the fill signal.
Key - Delay	• **Horizontal** and **Vertical**: Adjusts the horizontal (nanoseconds) and the vertical (lines) timing of key signal.

Audio Page

The Audio page is a sub-page of the Hardware Settings page, which is only visible when a Vertigo XG hardware device is selected in the Dashboard's device list. The Audio page (figure 4-17) exposes parameters that allow you to set the Vertigo XG's audio processing.

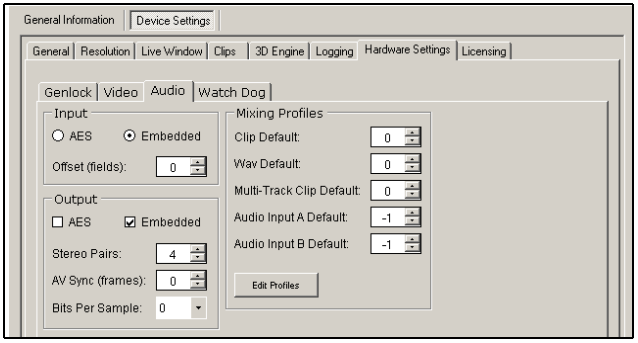


Figure 4-17. Device Settings' Audio page

INPUT	• **AES**: Specifies that the audio input signal is discrete (AES), rather than being embedded (SDI) in the video signal. • **EMBEDDED**: Specifies that the audio input signal is embedded in the video signal (SDI), rather than a discrete (AES) audio signal (separate from the video signal). • **OFFSET (FIELDS)**: Adds additional delay to the time it takes audio to be captured at the input and then output again.
OUTPUT	• **AES**: Specifies that the audio output signal is discrete (AES), rather than being embedded (SDI) in the video signal. • **EMBEDDED**: Specifies that the audio output signal is embedded in the video signal (SDI), rather than a discrete (AES) audio signal (separate from the video signal). • **AV SYNC**: Specifies the number of frames to shift the audio and video output out of sync. A positive number delays the audio and a negative number delays the video. • **BITS PER SAMPLE**: Specifies the bit depth of the audio signal. The available values are **0**, **16**, **20**, and **24**. The default value is **0**. Using a value of 0 means that the XG will automatically choose the bit-depth based on the output format. For SD, it is **20** and for HD it isl **24**. • **STEREO PAIRS**: Specifies the number of stereo pairs to be captured from the current audio source.

MIXING PROFILES	The following are the default mix profiles used for each type of object, like clips, .wav file...etc. Type the Profile ID number to assign a mixing profile from the Audio Mixing Profiles dialog box as the default mixing profile (see "Audio Mixing Profiles Dialog Box" on page 4-39). • **CLIP DEFAULT** • **WAV DEFAULT** • **MULTI-TRACK CLIP DEFAULT** • **AUDIO INPUT A DEFAULT** • **AUDIO INPUT B DEFAULT** • **EDIT PROFILES** button: Opens the Audio Mixing Profiles dialog box (see "Audio Mixing Profiles Dialog Box" on page 4-39).

Watch Dog Page

The Watch Dog page is a sub-page of the Hardware Settings page, which is only visible when a Vertigo XG hardware device is selected in the Dashboard's device list. The Watch Dog page (figure 4-18) is a feature that allows the system to continue video passthrough during an application crash or a system failure.

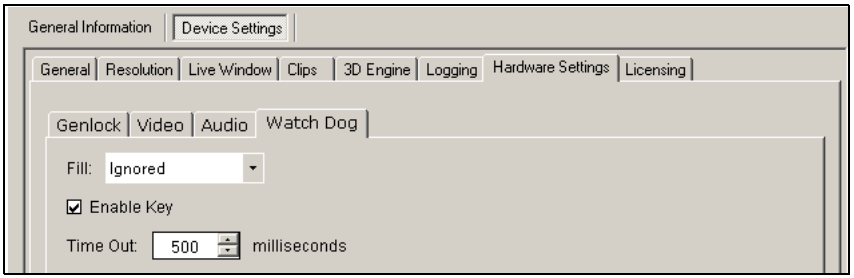


Figure 4-18. Device Settings' Watch Dog page

ENABLE FILL	Enables the hardware watchdog. When the Vertigo XG is not running or the machine is off, the watchdog will bypass all video inputs through their matching outputs.
ENABLE KEY	When the hardware watchdog is actively bypassing video, this setting specifies whether the accompanying key outputs should be opaque or transparent.
TIME OUT	Specifies the number of milliseconds that must elapse during which no rendering occurs before the hardware watchdog kicks in. The default value is 500.

Device Discovery Tool

The Dashboard Device Discovery tool allows you to set the method to be used to detect the Vertigo XGs and Vertigo software CGs that are local to your machine or on your network. Once the devices are located, XG Dashboard lists these devices on the Device List, which allows you to view and edit the device's settings.

The Device Discovery tool is accessed by selecting Dashboard's **TOOLS > SETTINGS > DEVICE DISCOVERY** menu command.

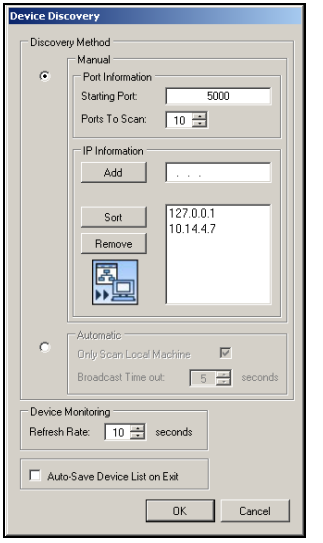


Figure 4-19. Device Preferences Dialog Box

One of the first things that XG Dashboard does on start up is use the Device Discovery tool to perform a device discovery. A device discovery performs a search of your local machine and/or your network for all of the active Vertigo XG/CG devices that are able to connect to Dashboard and then lists them on Dashboard's Device List. Selecting a device from the Device List activates the General Information tab and Device Settings pages, which allow you to configure the device's settings.

The following table provides a description for each of the fields in the Device Discovery dialog box and the topics listed below describe the tasks that two methods that you can use to perform the device discovery.

- "Performing a Manual Device Discovery" on page 4-38
- "Performing an Automatic Device Discovery" on page 4-38

MANUAL	**PORT INFORMATION** • **STARTING PORT**: Specifies the port number to use as the starting point for searching for devices. • **PORTS TO SCAN**: Specifies the number of ports to scan starting at the port number specified in the Starting Port. **IP INFORMATION** Displays a list of IP addresses to scan to detect Vertigo XG/CG devices. The IP address is that of the machine that the Vertigo XG/CG is running on. You can get this IP address either by typing `IPConfig` on the command prompt, or by using the IP address listed on the Vertigo XG/CG software's dialog box. • **ADD**: Enter a specific IP address that you suspect the device to be using. • **SORT**: Arranges the IP addresses added to the IP information list in descending numerical order. • **REMOVE**: Removes the selected IP address from the IP Information list.
AUTOMATIC	The device discovery's automatic mode performs a thorough search for all of the Vertigo XG and VertigoCG devices on your local machine or on your network. • **ONLY SCAN LOCAL MACHINE**: Rather than searching for all of the Vertigo XG and VertigoCG devices on your network, this setting limits the search to finding all the XG/CG devices connected/on your local machine. • **TIME OUT**: Sets a time limit at which to stop the search for devices. The default value is 5 seconds.
DEVICE MONITORING	**REFRESH RATE**: Sets the frequency (in seconds) at which to poll the devices to see if they are active or inactive. The default value is 10 seconds. See "Monitoring the status of a device" on page 4-9 for more information.
SAVE DEVICE LIST ON EXIT	The Save Device List on Exit automatically saves the device list when you exit XG Dashboard. By default this parameter is not enabled. See "Saving the device list" on page 4-8 for more information.

Performing a Manual Device Discovery

The device discovery's manual mode allows you to focus your device search by limiting the search to particular port and IP limits. The search begins scanning for devices from the port number specified and then each sequential port up as specified by the Ports to Scan value.

It is recommended that you use the manual method if you are wanting to configure a particular Vertigo XG device and you know roughly, or even exactly, where the device is located on the network using its port and IP address information.

To perform a manual device discovery:

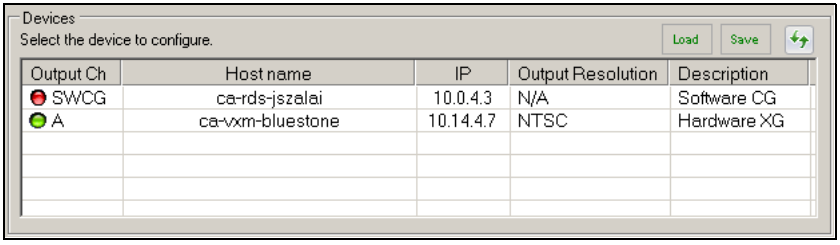
1. Open the Device Discovery tool.

   TOOLS > SETTINGS > DEVICE DISCOVERY

2. Set the **DEVICE DISCOVERY METHOD** in the device discovery tool.
   a. Select the **MANUAL** Discovery Method.
   b. Set the **STARTING PORT** parameter by typing in the port number that you suspect the device to be using for the Vertigo XG device.
   c. Set the **PORTS TO SCAN** parameter.
   d. Verify that the appropriate IP address appears in the IP Information list (see IP INFORMATION in the table above).

      If the desired IP address does not exist, type the IP address digits in the **ADD** text box and click the **ADD** button. Be sure to pay close attention to the dot separators when typing the IP Address.
   e. Click **OK**.
3. Start the device discovery process by clicking the **REFRESH** button .

   Dashboard will start scanning the specified IP addresses and ports for any available Vertigo XG devices. Dashboard then automatically updates the Device List.



Performing an Automatic Device Discovery

The automatic method of performing a device discovery provides you with the options of scanning only your local machine for an active Vertigo XG/CG, or to scan the network within a specified time out period.

See "Perform a Device Discovery" on page 5-9 for instructions on performing an automatic device discovery.

Audio Mixing Profiles Dialog Box

The Audio Mixing Profiles dialog box allows you to create up to ten (10) audio mixing profiles that can be assigned as defaults for the various audio formats on the Hardware Settings' Audio page (see "Audio Page" on page 4-33).

The Audio Mixing Profile dialog box facilitates the creation of mixing profiles by letting you work from within one of three predefined matrixes formats: 2x2, 6x6, or 8x8 channels. You can also add or remove channels from the matrix to suit your needs. Each matrix structure allows you to assign the percentage of the input audio signal that will be mixed into the output channel.

Figure 4-20 and the following tables the components of the Audio Mixing Profiles dialog box:

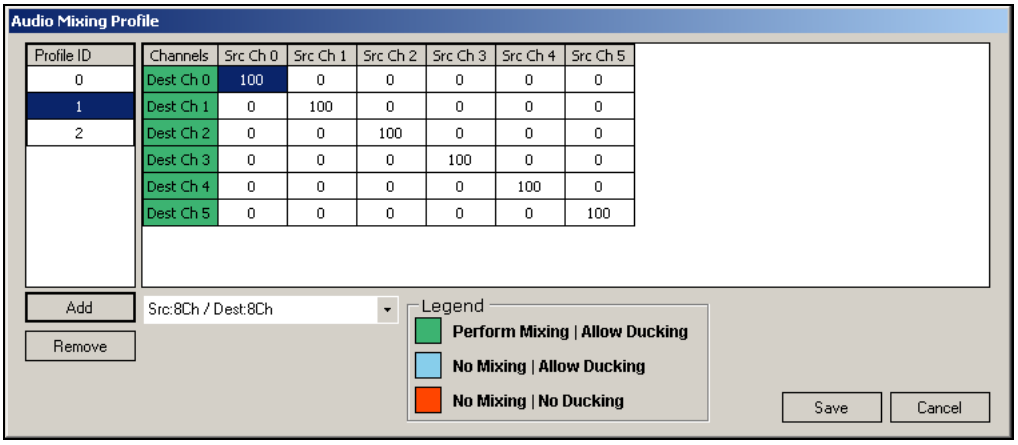


Figure 4-20. Audio Mixing Profile dialog box with a 6 x 6 matrix mixing profile

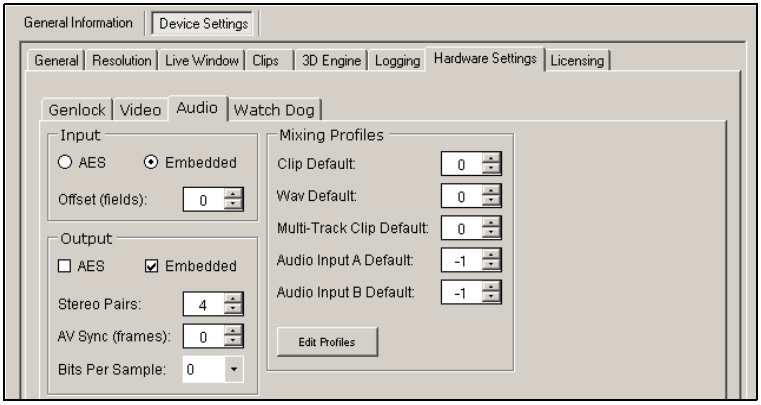
PROFILE ID	Identifies the profile ID number associated to a specific mixing profile matrix. You can store up to ten (10) audio mix profiles in the list (numbered 0 to 9). It is this number that will be used to set the default mixing profiles for the various audio files listed on the Hardware Settings' Audio page (see "Audio Page" on page 4-33).
ADD / **REMOVE** buttons	The **ADD** button adds the mixing profile matrix that is currently being created to the Profile ID list and assigns it a Profile ID number in the list. The **REMOVE** button deletes the selected mixing profile from the Profile ID list. The Remove command is alos accessible by right-clicking on the Profile ID list.

MATRIX FORMAT Dropdown List	This dropdown list contains three (3) predefined matrix formats that you can use as the basis for building your mixing profile. Although the matrixes are a predefined size, you can add channels to the matrix format by using the **ADD SOURCE** and **ADD DESTINATION** commands. The three predefined mixing matrix formats are: • **SRC: STEREO / DEST:STEREO**: A 2x2 matrix featuring 2 source channels and 2 destination channels used for creating stereo sound profiles (left and right). • **SRC: 6CH / DEST:6CH**: A 6x6 matrix featuring 6 source channels and 6 destination channels used for mixing to 5.1 conventional surround sound (for example: front left, front right, front center, low frequencies/subwoofer, back left, and back right). • **SRC: 8CH / DEST:8CH**: An 8x8 matrix featuring 8 source channels and 8 destination channels used for mixing to 8-channel commercial surround sound (for example: front left, front right, front center, low frequencies/subwoofer, back left, back right, Side left, and side right).
SOURCE /DESTINATION CHANNELS	Source channels represent the channels upon which the audio data is entering the system and the destination channel is the channel upon which the audio data will leave the system. The intersecting points in the matrix (the box where the source and destination channels intersect) specifies the percentage of the source signal that will be passed through to the destination channel. For example, a value of zero (0) means that none of the signal with will pass through to the destination channel, while a value of 100 means the full signal will be passed through. The destination channel headings feature different color backgrounds depending on the status/setting of the channel. The colors are defined in the interface's legend: • **GREEN**: Perform Mixing / Allow Ducking • **BLUE**: No mixing / Allow Ducking • **RED**: No mixing / No Ducking

SOURCE /DESTINATION CHANNELS - CONTINUED	The destination channel will display as green if mixing is enabled by setting the intersecting mixing value as greater than zero (>0). If the value is set to zero, this indicates that no mixing will occur and therefore the destination channel will be displayed in red. When a channel is set to have no mixing (i.e. 0 value), you can use a technique called ducking by using the **DUCK** command. The Duck command determines the behavior of the output channel with respect to the original level (see DUCK command below). When the **DUCK** command is applied to a destination channel turns from red to blue. Note that ducking is automatic when mixing.
SAVE / **CANCEL** buttons	The **SAVE** button saves the mixing profile matrix, and any changes that where made to the matrix values or structure, by associating it with a number in the Profile ID list. The **CANCEL** button allows you to exit the Audio Mixing Profile dialog box without saving any of the changes made to the mixing matrixes/profiles.
ADD SOURCE command	Use the **ADD SOURCE** command to add an additional source channel to a predefined mix matrix. The **ADD SOURCE** command is accessed by right-clicking anywhere within the matrix and selecting **ADD SOURCE** from the command list.
ADD DESTINATION command	Use the **ADD DESTINATION** command to add an additional destination channel to a predefined mix matrix. The **ADD DESTINATION** command is accessed by right-clicking anywhere within the matrix and selecting **ADD DESTINATION** from the command list.
DUCK command	The **DUCK** command enables a technique for attenuating the audio coming in on the "ducked" channel, to make room for another signal to dominate. For example, the music coming in on a channel will lower when a voice over is introduced. Ducking is automatically enable when mixing is enabled (value > 0). You can also manually set the ducking command when the mixing value is set to zero (0 indicating no audio mixing to that channel). The **DUCK** command is accessed by right-clicking the destination channel heading and selecting from the command list. When ducking is enabled, the destination channel's heading turns blue.

Creating an audio profile using the Audio Mixing Profile dialog box

1. Open the Audio Mixing Profile dialog box by pressing the **EDIT PROFILES** button on the Hardware Settings' Audio page.

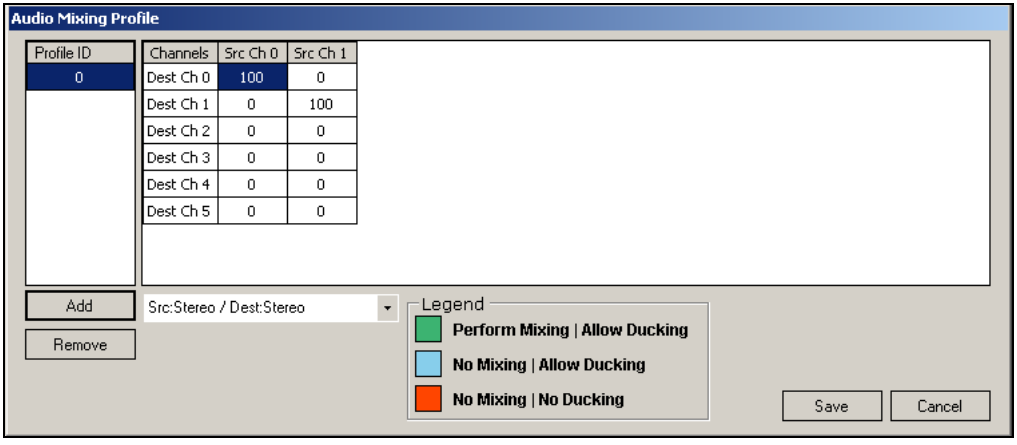


2. Select a predefined matrix format from the dropdown list.

   The choices are:

   - **SRC:STEREO / DEST:STEREO**
   - **SRC:6CH / DEST:6CH**
   - **SRC:8CH / DEST:8CH**

   Note that these are basic matrix formats and you may need to add source or destination channels to the matrix to meet your needs. For example, if you want to create an audio mixing profile that takes a 2-channel stereo source to a 6-channel 5.1 surround destination, you would select **SRC:STEREO / DEST:STEREO** and then add four (4) destination channels to the matrix (see ADD DESTINATION command above).



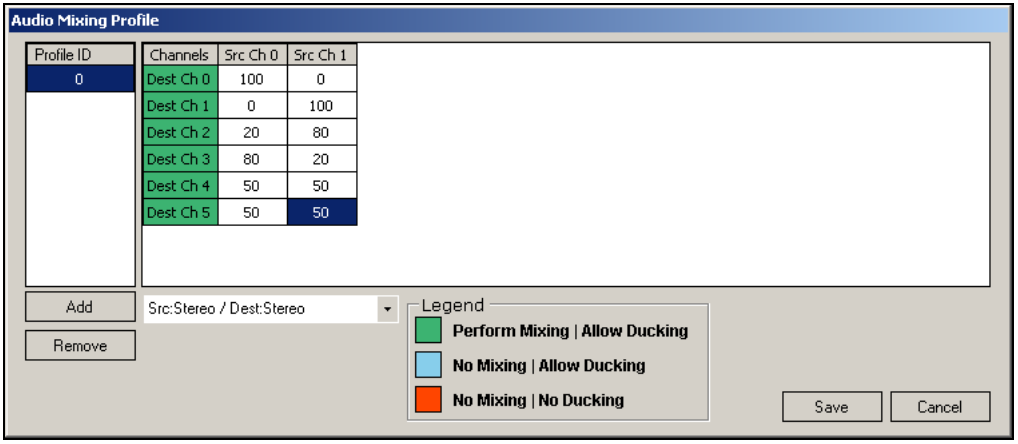
3. Press the **ADD** button to add the profile to the Profile ID column. The matrix is assigned a Profile ID number (0 to 9).

   The audio mixing matrix appears in the main frame with a default channel matching profile (i.e. 100% of source channel 0 to destination channel 0).

4. Assign the mixing values by typing the mixing values for each of the channels in the matrix. The number represents the percentage of the source signal to be mixed into the destination channel (for example, 100 is 100%).

   The matrix below demonstrates the audio mixing profile for a 2-channel stereo source to be mixed into a 6-channel 5.1 surround configuration, where:

   - 100% of the source channel 0 and 0% of the source channel 1 will be mixed into destination channel 0.
   - 0% of the source channel 0 and 100% of the source channel 1 will be mixed into destination channel 1.
   - 20% of source channel 0 and 80% of source channel 1 will be mixed into destination channel 2.
   - 80% of source channel 0 and 20% of source channel 1 will be mixed into destination channel 3.
   - 50% of source channel 0 and 50% of source channel 1 will be mixed into destination channel 4.
   - 50% of source channel 0 and 50% of source channel 1 will be mixed into destination channel 5.



5. Save the mixing profile to the Profile ID list by pressing the **SAVE** button.
6. Return to the Hardware Settings' Audio page in Dashboard and type the Profile ID number for the desired profile in the appropriate Mixing Profile parameter.

5 VERTIGO XG CONFIGURATION PROCEDURES AND SCHEMAS

Using the XG Dashboard, you can configure the settings and behavior of Vertigo XG devices that are local to the host machine or those that are available on your network.

The following sections serve both an educational and a practical function. Using preliminary configuration procedures you will perform the practical task of verifying the set-up and operation of the Vertigo XG device, and become familiar with the various configuration tasks using XG Dashboard.

As well, practical snapshots of several common configuration schemas are provided to help you become familiar with some of the basic settings for various device configurations.

- "Getting Started - Preliminary Configuration Procedures" on page 5-2
- "Quick Reference - Vertigo XG Configuration Schemas" on page 5-24

☑ NOTE

Before you begin configuring and using the Vertigo XG, it is important that you read and understand the guidelines and recommendations as outlined in "Preliminary Guidelines and Recommendations" on page 1-7.

Getting Started - Preliminary Configuration Procedures

Before you start to configure particular Vertigo XG device settings, we recommend that you perform the following procedures to verify that the Vertigo XG device is properly licensed, connected to the broadcast monitor, and that some of the basic device and output settings are properly configured. These procedures will also help to you to become familiar with the XG Dashboard application.

The “Getting Started” preliminary configuration procedure consists of the following procedural phases:

- Phase I - License Installation and Verification: Verify the installation of the appropriate software licenses for the Vertigo XG.
- Phase II - Device Selection Verification: Ensures that the XG Dashboard application can communicate with the Vertigo XG device.
- Phase III - Device Connection Verification: Ensures that the Vertigo XG is properly connected and in communication with the broadcast monitor.
- Phase IV - Output Verification: Ensures that a scene can be loaded from the Vertigo XG and properly viewed on the broadcast monitor.

Phase I - License Installation and Verification

It is recommended that you start the Vertigo XG configuration process by verifying that the proper application licenses are installed and available to the Vertigo XG and software CG.

As figure 5-1 demonstrates, when you attempt to use the Vertigo XG or software CG without a valid license, the renderer window displays a watermark and the XG window's title bar displays a message to remind you to acquire and install licenses. The types of software licenses that are available for these applications is described in "Licensing Information" on page 1-5.

Instructions for verifying the licensing of the Vertigo XG (and software CG) are available in "Verify the XG/CG application licenses" on page 5-4.

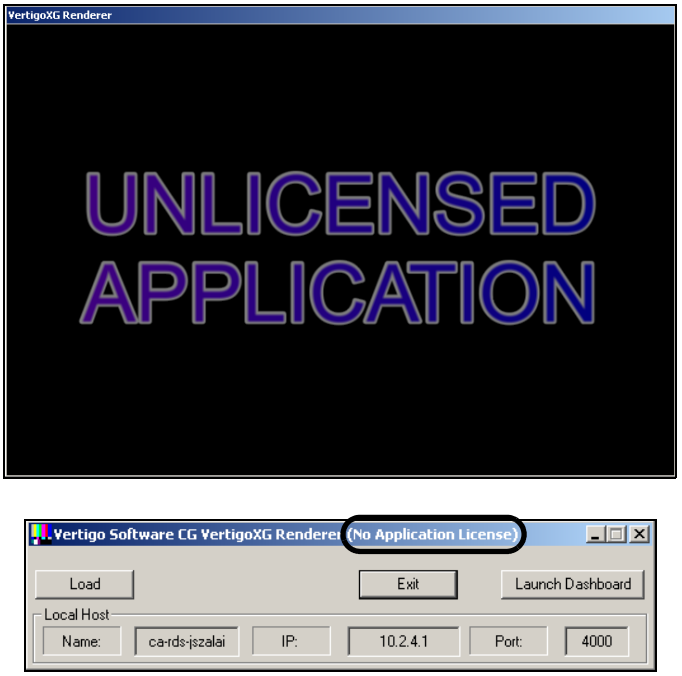


Figure 5-1. Messages remind you to license the XG and CG software applications

Verify the XG/CG application licenses

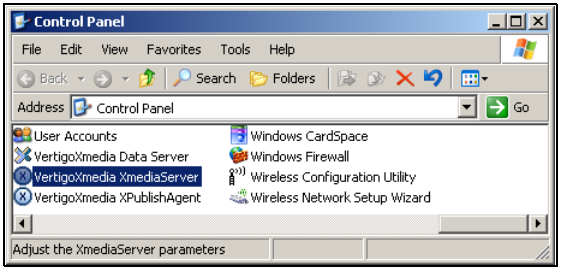
To verify that the proper application licenses are installed and available to the Vertigo XG:

1. Launch the Vertigo XG window (or, software CG window).
2. Proceed with one of the following:
   - If a licensing message is displayed in the renderer window or in the window's title bar (figure 5-1):
     a. Launch the XG Dashboard.
     b. Select the Device Settings tab's Licensing page (see page 4-27).
     c. Verify the **XMS IP ADDRESS** and **XMS PORT** settings.
        - If the settings are incorrect, edit the settings and press the **APPLY CHANGES** button. Close the XG/CG window and then launch it again.
          - If the licensing messages still appear, then follow the procedure described in "Acquire and apply licenses" on page 5-4.
          - If the licensing messages no longer appear, then proceed to "Phase II - Device Selection Verification" on page 5-7.
        - If the settings are correct, but the licensing messages still appear, follow the procedure described in "Acquire and apply licenses" on page 5-4. However, if the licensing messages no longer appear, proceed to "Phase II - Device Selection Verification" on page 5-7.
   - If there are no licensing messages displayed in the renderer window and the title bar, then the licensing is properly installed and you can proceed to "Phase II - Device Selection Verification" on page 5-7.

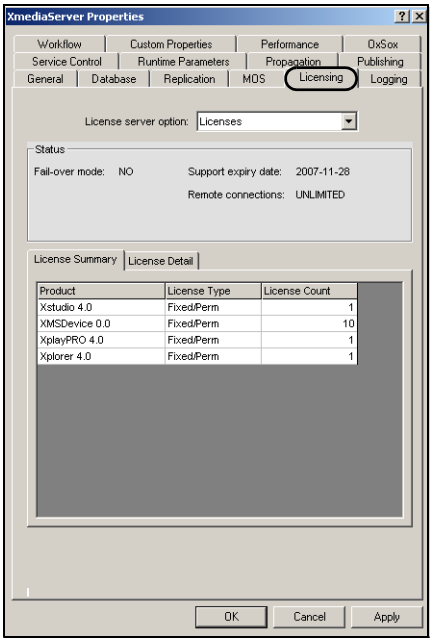
Acquire and apply licenses

Follow these instructions to acquire and apply the proper license keys.

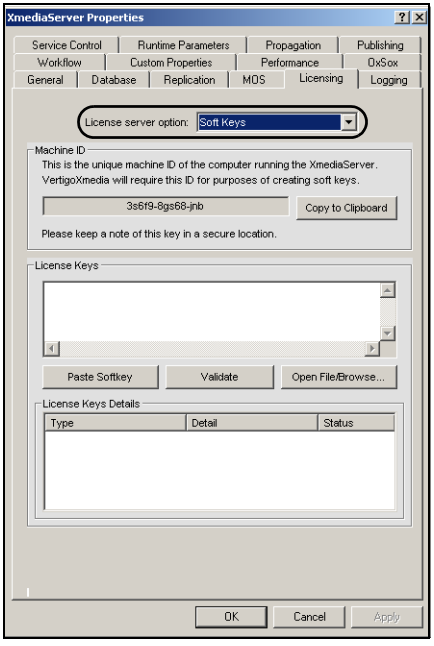
1. Open the **XMEDIA SERVER**, by selecting **VERTIGOXMEDIA XMEDIASERVER** from within the Windows Control Panel.



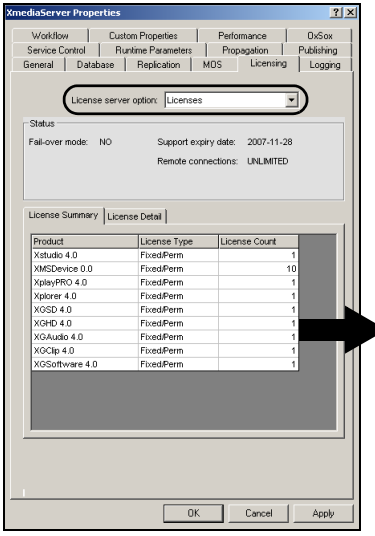
2. Select the **LICENSING** tab on the XmediaServer Properties Window.



3. Select **SOFT KEYS** from the **LICENSE SERVER OPTION** field's drop-down list.



4. Press the **COPY TO CLIPBOARD** button in the **MACHINE ID** section to copy your machine's unique identification number.
5. Paste the **MACHINE ID NUMBER** into an email and send the email to Miranda's Technical Support department (techsupp@miranda.com).
   Upon receipt of the emial, a Miranda representative will verify the device's licensing agreement and an email will be returned to you with the appropriate license code.
6. Copy and paste the license code from the email into the **LICENSE KEYS** text box on the Licensing tab.
7. Press the **VALIDATE** button.
8. Select **LICENSES** from the **LICENSE SERVER OPTION** field's drop-down list, and verify that the proper XG licenses appear in the **LICENSE SUMMARY** list.
   If the proper license is not listed, or if you require further licenses, please contact Miranda's Technical Support department (techsupp@miranda.com).



XGSD 4.0	Fixed/Perm	1
XGHD 4.0	Fixed/Perm	1
XGAudio 4.0	Fixed/Perm	1
XGClip 4.0	Fixed/Perm	1
XGSoftware 4.0	Fixed/Perm	1

9. To view the details of the license, select the license from the list and select the **LICENSE DETAIL** tab.
10. Press **OK** to close the XmediaServer Properties window.
11. Restart the XG/CG and renderer windows and verify that the licensing messages are no longer displayed.

Phase II - Device Selection Verification

Once the Vertigo XG has been installed and is running, you can begin the configuration process by verifying that the XG Dashboard application is properly communicating with the Vertigo XG device. The XG Dashboard allows you to configure local or networked Vertigo XG devices by changing device parameters that affect the behavior and settings of the device.

The Device Selection Verification flowchart (figure 5-2) and the topics listed below will guide you through the logic and steps for verifying the communication between the Vertigo XG device and Dashboard.

- Device Selection
- Perform a Device Discovery
- Verify Device and Network Status

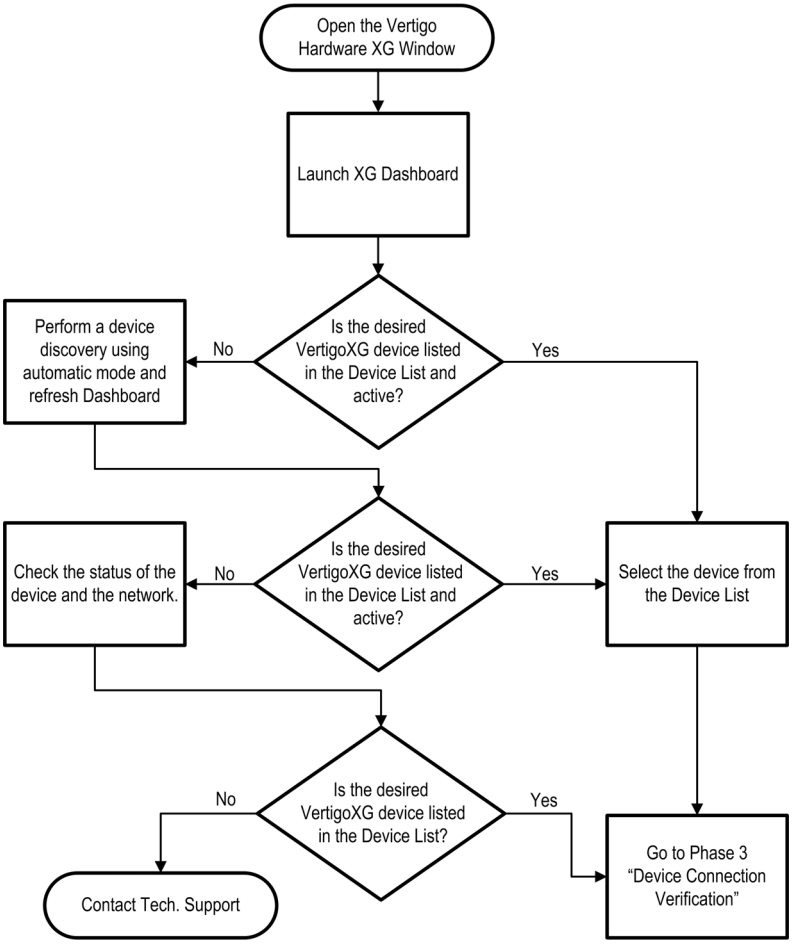

Open the Vertigo Hardware XG Window
Launch XG Dashboard
Is the desired VertigoXG device listed in the Device List and active?
No
Perform a device discovery using automatic mode and refresh Dashboard
Yes
Is the desired VertigoXG device listed in the Device List and active?
No
Check the status of the device and the network.
Yes
Select the device from the Device List
Is the desired VertigoXG device listed in the Device List?
No
Contact Tech. Support
Yes
Go to Phase 3 "Device Connection Verification"

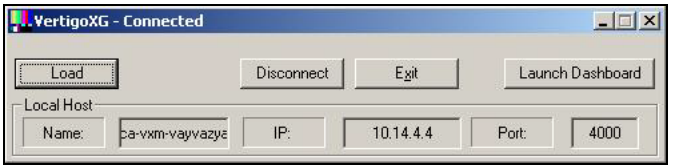
Figure 5-2. Phase II - Device Selection Verification flowchart

Device Selection

The XG Dashboard application allows you to configure a Vertigo XG device, but the device must be running and in communication with Dashboard before any configuration procedures can begin.

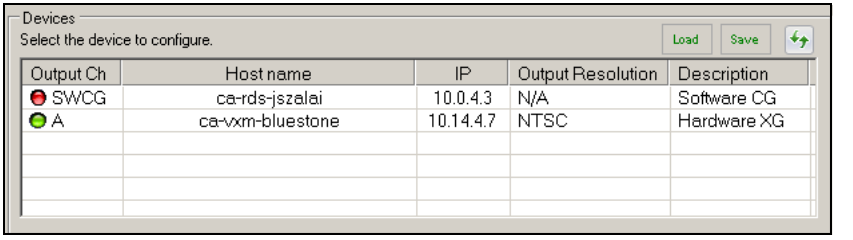
With the Vertigo XG device running (and connected to the network), perform the following steps to in order to put the device in communication with Dashboard.

1. Open the Vertigo XG window by selecting:
   START > PROGRAMS > VERTIGOXMEDIA > VERTIGOXG



2. Launch Dashboard by pressing the **LAUNCH DASHBOARD** button on the VertigoXG window.

   Upon start, Dashboard automatically begins a device discovery, which uses the method specified by the device discovery tool to locate and list the available XG devices on the Dashboard's Device List.



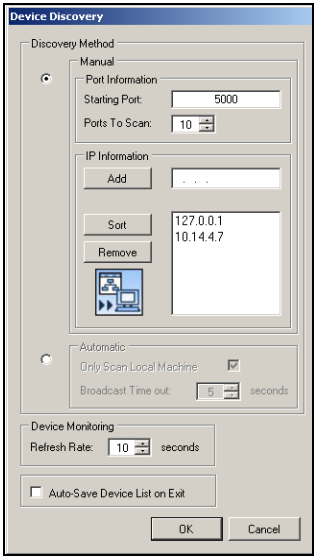
3. Select the device to be configured from Dashboard's Device List.

   If the desired device is not listed on the Device List, perform a device discovery and refresh Dashboard (see Perform a Device Discovery below).

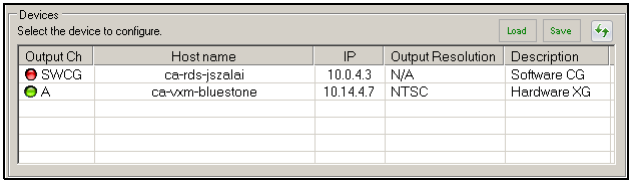
Perform a Device Discovery

You will have to perform another device discovery, if the desired Vertigo XG device was not listed on the Device List when Dashboard performed its initial device discovery.

1. Open the Device Discovery tool.
   TOOLS > SETTINGS > DEVICE DISCOVERY



2. Set the Device Discovery method in the device discovery tool.
   a. Select the **AUTOMATIC** Discovery Method.
   b. Disable the **ONLY SCAN LOCAL MACHINE** parameter.
   c. Click **OK**.
3. Refresh the Device List by clicking the **REFRESH** button .
   Dashboard will start scanning the network and the local machine for any available Vertigo XG devices. Dashboard then automatically updates the Device List. Select the desired device from the Device List. If the desired device has a green light in the Output Channel column, continue to the next phase in the configuration procedure.



   If, however, the desired device is still not listed on the Device List, or if the device is listed, but has a red light in the Output Channel column, you will have to verify the status of the device (on/off), as well as the status of the network (see Verify Device and Network Status below).

Verify Device and Network Status

If the desired device is still not listed on the Device List, or if the device is listed, but is inactive (red light), you should verify the status of the device and the network, to be sure that neither is down.

To verify the status of the device:

1. Physically verify that the Vertigo XG is turned on and operating.
   - If the device is turned off, turn it by pressing the power button of the chassis' control panel.
   - If the device is running but it seems to have crashed (non-responsive), reset the device by pressing the reset button on the chassis' control panel.
2. If the device is listed as inactive (red light), restart the device using Dashboard.
   a. Select the device in the Device List.
   b. Select the **RESTART DEVICE** command from the Device menu.
3. Refresh the Device List by clicking the **REFRESH** button .

   Dashboard will start scanning the network and the local machine for any available Vertigo XG devices. Dashboard then automatically updates the Device List. Select the desired device from the Device List. If the desired device has a green light in the Output Channel column, continue to the next phase in the configuration procedure.

   If, however, the desired device is still not listed on the Device List, or if the device is listed as inactive (red light), verify the status of the network.

To verify the status of the network:

1. Open the Local Area Connection Status window by selecting:

   START > SETTINGS > NETWORK CONNECTIONS > LOCAL AREA CONNECTIONS
2. On the Local Area Connection Status window, verify that the **CONNECTION STATUS** field is connected.

   If the connection status is disabled:
   - Refresh the network connection.
   - Check that the network cable (Ethernet) is properly connected to the Vertigo XG chassis.
   - Ping the IP address of the Vertigo XG device to be sure that it is valid.

   If the network was disabled and is now connected, refresh the Device List by clicking the **REFRESH** button . Dashboard will start scanning the network and the local machine for any available Vertigo XG devices. Dashboard then automatically updates the Device List. Select the desired device from the Device List. If the desired device has a green light, continue to the next phase in the configuration procedure.

   If, however, the desired device is still not listed on the Device List, or if the device is listed as inactive (red light), contact Miranda's Technical Support department for further assistance.

Phase III - Device Connection Verification

The Device Connection Verification flowchart (figure 5-3) and the topics listed below guide you through the logic and steps for verifying that the Vertigo XG device is properly connected and communicating with the broadcast monitor.

- Enable/Display Statistics on the broadcast monitor
- Verifying output resolution and channel settings
- Enabling the Live Window
- Verifying the Device Output Settings

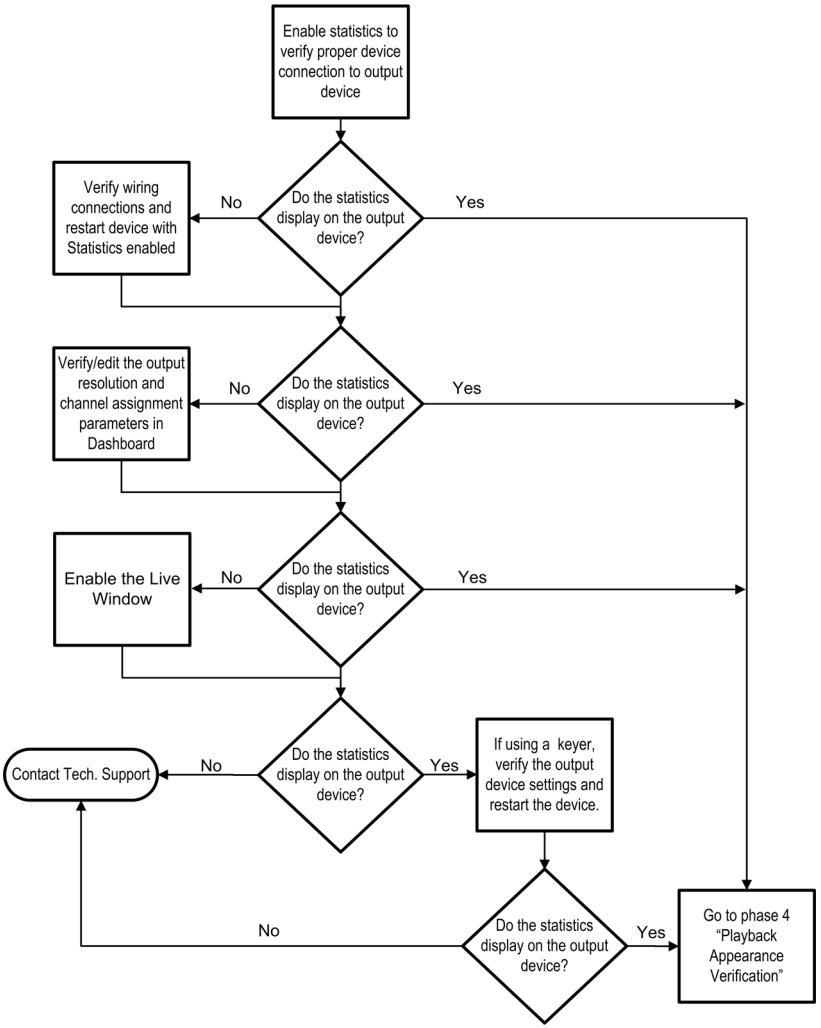

Enable statistics to verify proper device connection to output device
Do the statistics display on the output device?
No
Verify wiring connections and restart device with Statistics enabled
Yes
Do the statistics display on the output device?
No
Verify/edit the output resolution and channel assignment parameters in Dashboard
Yes
Do the statistics display on the output device?
No
Enable the Live Window
Yes
Do the statistics display on the output device?
No
Contact Tech. Support
Yes
If using a keyer, verify the output device settings and restart the device.
Do the statistics display on the output device?
No
Yes
Go to phase 4 "Playback Appearance Verification"

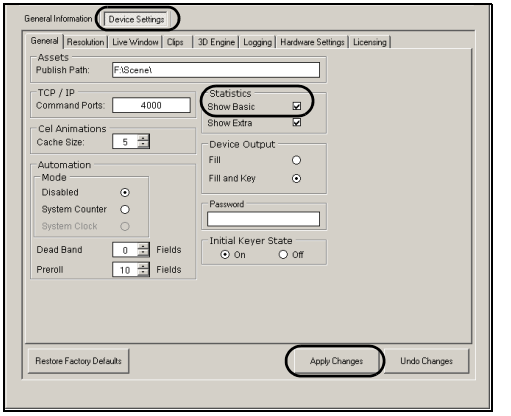
Figure 5-3. Phase III - Device Connection Verification flowchart

Enable/Display Statistics on the broadcast monitor

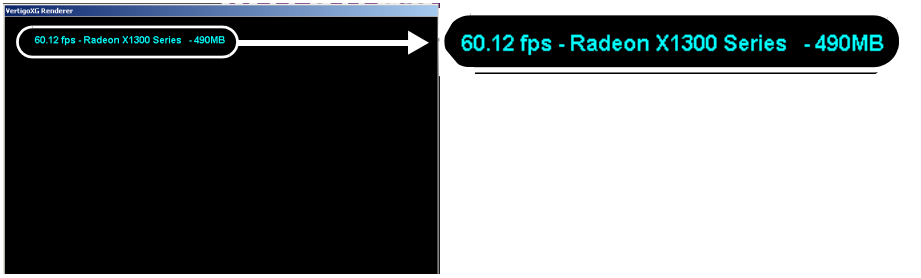
Once you have selected an active device the Device List, you can display device information (statistics) on the broadcast monitor as evidence of connectivity and communication between the Vertigo XG and the broadcast monitor.

To display statistics on the broadcast monitor:

1. Select the **DEVICE SETTINGS** tab on the Dashboard interface.



2. Enable the **SHOW BASIC** setting on the General page.
   This setting instructs the XG device to display device information (statistics) on the broadcast monitor's display.
3. Press the **APPLY CHANGES** button.
   The statistics should appear as one line of text in the upper portion of the output display.



If the statistics display on the broadcast monitor, the XG device is properly connected to the monitor and you can proceed to the next phase in the configuration process ("Phase IV - Output Verification" on page 5-17).

However, if the statistics do not display on the broadcast monitor, start troubleshooting by verifying the physical connection between the Vertigo XG and the monitor (see Verifying Wiring Connections below).

Verifying Wiring Connections

Figure 5-4 illustrates the wiring configuration for a single channel (A) SDI connection, which uses a BNC connector and coaxial cable to deliver SDI video signals from the Vertigo XG to the broadcast monitor.

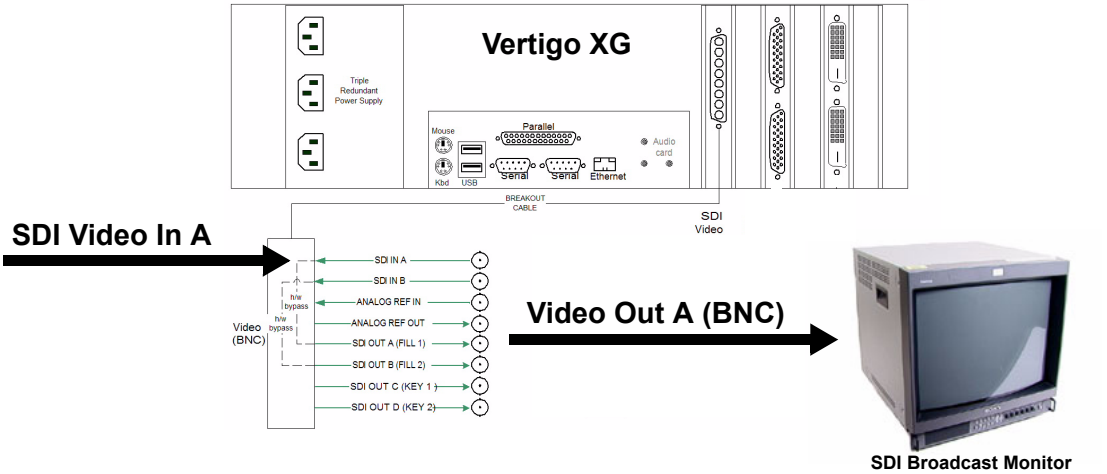


Figure 5-4. Single channel SDI connection from the Vertigo XG to a SDI broadcast Monitor

If the statistics do not display on the broadcast monitor, it could indicate that the wiring is not properly connected between the Vertigo XG and the broadcast monitor.

1. Physically verify that the BNC connector is properly connected to both the Vertigo XG device and the coaxial cable is equally secured to the broadcast monitor.

   See "Video Input/Output Channels" on page 2-6 for other wiring configurations.
2. Restart the device using Dashboard.
   a. Select the device in the Device List.
   b. Select the **RESTART DEVICE** command from the Device menu.

If the statistics display on the broadcast monitor, the XG device is now properly connected to the monitor and you can proceed to the next phase in the configuration process ("Phase IV - Output Verification" on page 5-17).

However, if the statistics do not display on the broadcast monitor, continue troubleshooting by verifying the resolution format compatibility, as well as the resolution and channel settings in Dashboard (see Verifying output resolution and channel settings below).

Verifying output resolution and channel settings

If the statistics do not display on the broadcast monitor, or displays but is distorted, it could indicate that the monitor does not support the Vertigo XG device's resolution format. For example, statistics may not display if the Vertigo XG is configured to output HD signals, but the broadcast monitor receiving the signal does not support HD. If this is the case, then change the broadcast monitor to that it is compatible with the Vertigo XG's output formats.

Another reason the statistics might not be displaying, or displays but is distorted, that the rendering output resolution specified in Dashboard does not match the resolution of the monitor.

To verify/edit the output resolution:

1. Select the device is the Device List.
2. Read the **RESOLUTION INFORMATION** fields on the **GENERAL INFORMATION TAB**'s page.

   If the resolution settings do not match the resolution format of the broadcast monitor, edit the resolution settings on the Device Settings' Resolution page and then restart the device.

Another reason why the statistics might not be displaying could be that the output channel setting is incorrect on Dashboard's Device Settings' Video page.

To verify/edit the output channel assignment setting:

1. Select the device is the Device List.
2. Select the Device Settings' Video page and verify/edit the **OUTPUT CHANNELS** parameter setting. Ensure that this setting identifies the channel that is wired to the broadcast monitor. If it does not, then edit the parameter, then restart the device.

If the statistics now display on the broadcast monitor, the XG device is now properly connected to the broadcast monitor and you can proceed to the next phase in the configuration process ("Phase IV - Output Verification" on page 5-17).

However, if the statistics still do not display on the broadcast monitor, continue to troubleshoot by enabling the Live Window to see if the Vertigo XG is actually outputting the statistics (see Enabling the Live Window below).

Enabling the Live Window

In this task you will use the Live Window to verify that the Vertigo XG is actually outputting the statistics. The Live Window is an additional display window that displays the output of the Vertigo XG directly on the host computer's monitor. If the statistics display on the Live Window, but not on the broadcast monitor, then it reassures you that the Vertigo XG is properly functioning and you can concentrate on connection and settings issues between the XG and the broadcast monitor.

To enable the Live Window:

1. Select the device is the Device List.
2. Select the Live Window page on the Device Settings tab.
3. Select **ENABLED** and then press the **APPLY CHANGES** button.

   Agree to restart the device when Dashboard asks. The Live Window's Renderer window now appears on the host computer's monitor.
4. Select the device is the Device List and then select the General page on the Device Settings tab.
5. Verify that the Statistics' **SHOW BASIC** setting is selected.
   - If it is not already selected, select **SHOW BASIC** and press the **APPLY CHANGES** button and the Statistics should appear in the Renderer window.
   - If it is already selected, verify whether or not the statistics are displayed on the Renderer window.

If the statistics now display on the broadcast monitor, the XG device is now properly connected to the broadcast monitor and you can proceed to the next phase in the configuration process ("Phase IV - Output Verification" on page 5-17).

However, if the statistics still do not display on the broadcast monitor and you are using a keyer, continue to troubleshoot by verifying the fill and Fill + Key settings (see Verifying the Device Output Settings below).

If you are not using a keyer and the statistics still do not display, please contact Miranda's technical support department for further assistance.

Verifying the Device Output Settings

If you are using a keyer between the Vertigo XG device and the broadcast monitor, the reason why the statistics still do not display on the broadcast monitor might simply be an incorrect output setting on Dashboard.

If the **OUTPUT DEVICE** parameter on the Device Settings's General page is set to **FILL**, the key is completely blackened. This results in an entirely black output, which blocks the display of the statistics on the broadcast monitor. Therefore, if you are using a keyer, the **OUTPUT DEVICE** parameter must be set to **FILL AND KEY**.

To verify/edit the device output settings:

1. Select the device is the Device List.
2. Select the General page on the Device Settings tab.
3. Set the Output Device parameter to **FILL AND KEY** and then press the **APPLY CHANGES** button.
4. When Dashboard asks, agree to restart the device by pressing **YES**.

If the statistics now display on the broadcast monitor, the XG device is now properly connected to the broadcast monitor and you can proceed to the next phase in the configuration process ("Phase IV - Output Verification" on page 5-17).

However, if the statistics still do not display on the broadcast monitor, please contact Miranda's technical support department for further assistance.

Phase IV - Output Verification

The Output Verification flowchart (figure 5-5) and the topics listed below guide you through the logic and steps for verifying that the Vertigo XG is able to properly load and playout a scene to broadcast monitor. By loading and playing a scene, you will also be able to adjust device settings that affect the playout, like out of synch timing (GenLock) and resolution format incompatibility.

- Setting Publish Path Settings
- Locating and Loading a Scene
- Verifying Wiring and Device Output Settings
- Setting Genlock and Resolution Settings

☑ NOTE

This procedure requires you to have a published scene (a `.xml` scene file published by Xstudio) stored and accessible.

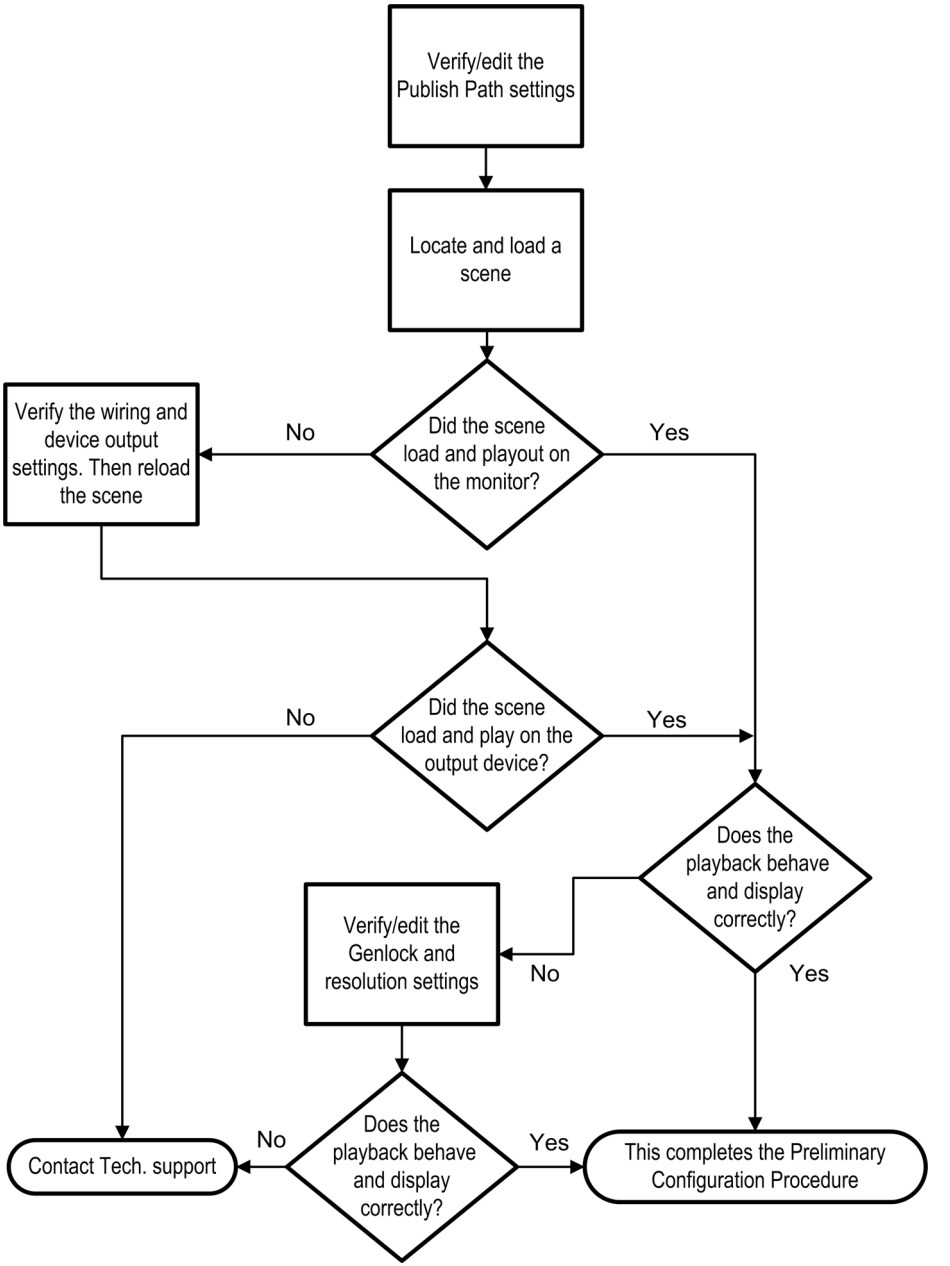

Verify/edit the Publish Path settings
Locate and load a scene
Did the scene load and playout on the monitor?
No
Yes
Verify the wiring and device output settings. Then reload the scene
Did the scene load and play on the output device?
No
Yes
Does the playback behave and display correctly?
Verify/edit the Genlock and resolution settings
No
Yes
Does the playback behave and display correctly?
No
Yes
Contact Tech. support
This completes the Preliminary Configuration Procedure

Figure 5-5. Phase IV - Output Verification flowchart

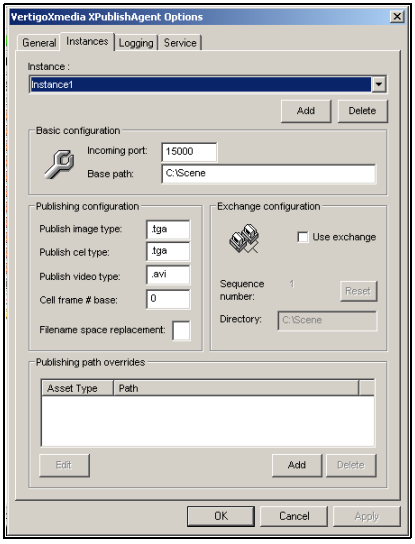
Setting Publish Path Settings

To ensure that assets are properly stored and available to the Vertigo XG, It is recommended that you verify that the publish path settings match in both the Xpublish Agent and XG Dashboard (see "Publish Path Coordination Guidelines" on page 1-13). The default directory for Vertigo XG hardware devices is `F:\Scene`.

To verify that the publish path directories are identical:

1. Open the VertigoXmedia Xpublish Agent and verify/edit the Base Path parameter on the Instance tab.
   a. Open the **VERTIGOXMEDIA XPUBLISH AGENT** from the host computer's Windows Control Panel.
      START > SETTINGS > CONTROL PANEL > VERTIGOXMEDIA XPUBLISH AGENT
   b. Select the **INSTANCES** tab.
   c. Verify that the directory location in the **BASE PATH** parameter is set to `F:\Scene`. If it is, then click **OK** to exit.

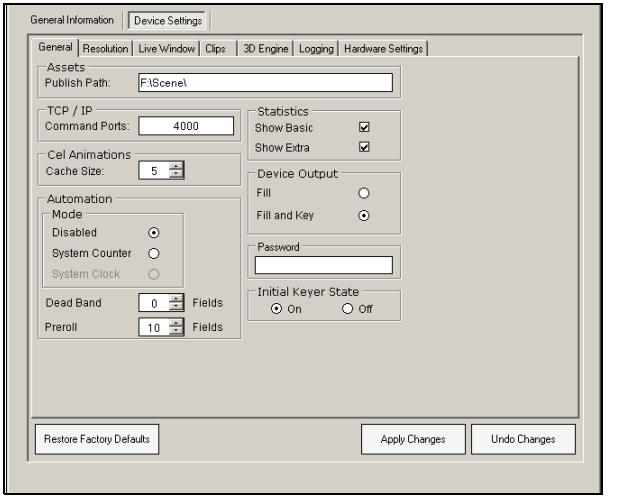
      If it is not, then type `F:\Scene` in the Base path parameter's text box and click **OK**.



2. Open XG Dashboard and verify/edit the Publish Path parameter on the Device Settings' General page.
   a. Open the XG Dashboard application (see "Starting the XG Dashboard" on page 4-3).
   b. Select the XG hardware device from the Device List.
   c. Select the Device Settings tab.
   d. Verify that the directory location in the **PUBLISH PATH** parameter is set to `F:\Scene\`.

   If it is, then there is no need to make changes.

   If it is not, then type `F:\Scene\` in the **PUBLISH PATH** parameter's text box and then click the **APPLY CHANGES** button.



Locating and Loading a Scene

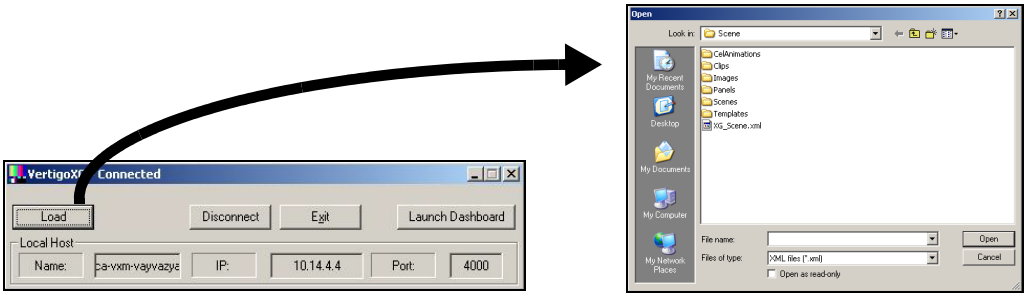
As explained in Setting Publish Path Settings above and on page page 1-13, the Publish Path parameter designates the storage location where the Vertigo XG expects to find scene files stored. This being said, we recommend that you copy all of your published scene files (`.xml`) to directory identified in the Publish Path parameter. The default directory for Vertigo XG hardware devices is `F:\Scene`.

Presuming that you now have a published scene stored in the appropriate directory, and that the Vertigo XG and the broadcast monitor are properly set-up and running, you can load the scene to verify the Vertigo XG playback settings. Note that the resolution of the scene file must be the same as the resolution settings in Dashboard.

To locate and load a scene and play it out on the monitor:

1. Press the **LOAD** button on the VertigoXG window.

   The Open dialog box opens to the Scene directory (as specified in the Publish Path parameter).



2. Navigate through the Scene directory to locate the desired file, then select the scene file and press the **OPEN** button.

   The contents of the scene file will display immediately only the broadcast monitor.

   If the scene plays on the monitor, look carefully at the playback quality and behavior. If you are satisfied with the playback, you have then completed the preliminary configuration procedures and you are ready to configure and use the Vertigo XG for playing out your specific scene requirements.

If the scene does not display, it could indicate problems with the wiring connections, or incorrect device output settings. Therefore, please continue to Verifying Wiring and Device Output Settings below.

If the scene did display, but the playback was behaving incorrectly, this is the result of incorrect timing synchronization between the Vertigo XG rendering settings and the output monitor, or incorrect resolution settings. Therefore, please continue to Setting Genlock and Resolution Settings below.

Verifying Wiring and Device Output Settings

If the scene does not display when it was loaded, it could indicate problems with the wiring connections, or incorrect device output settings. Therefore, it is recommended that you return and complete the tasks in the following sections "Verifying Wiring Connections" on page 5-13 and "Verifying output resolution and channel settings" on page 5-14. Then reload the scene according to the Locating and Loading a Scene instructions above.

If the scene plays on the monitor, look carefully at the playback quality and behavior. If you are satisfied with the playback, you have then completed the preliminary configuration procedures and you are ready to configure and use the Vertigo XG for playing out your specific scene requirements.

If the scene did display, but the playback was behaving incorrectly, this is the result of incorrect timing synchronization between the Vertigo XG rendering settings and the output monitor, or incorrect resolution settings. Therefore, please continue to Setting Genlock and Resolution Settings below.

If the scene still did not display on the output monitor, please contact Miranda's technical support department for further assistance.

Setting Genlock and Resolution Settings

If the loaded scene plays on the monitor, but the playback quality is affected by video jitter, then the timing synchronization between the Vertigo XG rendering settings and the output monitor is incorrect. To remedy this, you will edit the Genlock settings in Dashboard.

If the loaded scene displays on the monitor, but the playback is clipped or scaled down, this may indicate that your scene's resolution format is incompatible with the resolution settings in Dashboard.

To correct video jitter:

1. Select the **GENLOCK** page from Dashboard's Device Settings tab.
2. Set the Genlock's **SOURCE** parameter to **BLACKBURST** and then press the **REFRESH** button. The status will read **LOCKED**, indicating that the connection has been established.

   If the status indicates **FREE RUNNING**, there is no signal coming from the source (see "Genlock Page" on page 4-28 for more information).
3. Set the Genlock's **RESOLUTION** parameter to the correct resolution, which should match the resolution format of the output monitor and the resolution settings on the Device Settings tab's Resolution page.
4. If it is a single channel configuration, adjust the Horizontal and vertical delay parameters using the sliders on the Genlock page (see "Genlock Page" on page 4-28).

   If it is a dual channel configuration, adjust the Fill and Fill & Key Delay settings using the sliders on the Video page (see "Video Page" on page 4-31).
5. Press the **APPLY CHANGES** button.
6. Reload the scene according to the Locating and Loading a Scene instructions above.

To correct sizing problems due to incorrect resolution formats:

1. Verify and take note of the resolution format of the scene file.
2. Select the device is the Device List.
3. Read the **RESOLUTION INFORMATION** fields on the **GENERAL INFORMATION TAB**'s page.

   The resolution setting must not only match each other (all three the same), but they must also match the resolution format of the scene.

   Therefore, if the resolution settings do not match, edit the resolution settings on the Device Settings' **RESOLUTION** page (see "Resolution Page" on page 4-16) and then restart the device.
4. Reload the scene according to the Locating and Loading a Scene instructions above.

If the scene plays on the monitor and you are satisfied with the playback, you have completed the preliminary configuration procedures and you are ready to configure and use the Vertigo XG for playing out your specific scene requirements.

If the playback is still behaving incorrectly, please contact Miranda's technical support department for further assistance.

Quick Reference - Vertigo XG Configuration Schemas

The following sections provide quick reference snapshots of several basic device configuration settings schemas based on the resolution format, number of channels, and the fill & key output settings.

- NTSC/PAL Configuration Settings - Fill Only, Input and Output
- NTSC/PAL Configuration Settings - Fill and Key, Output Only
- HD 1080i30M Configuration Settings - Fill Only, Input and Output
- HD 1080i30M Configuration Settings - Fill and Key, Output Only
- Dual Channel SD/HD Configuration Settings - Fill and Key, Input and Output

☑ NOTE

The schemas presented in this section are generic and demonstrate possible minimal settings based on the specified profiles. Only the indicated settings are relevant to the profile, and all other parameters are meant to be set to their factory default state. These schemas are for demonstration purposes only. Be sure to configure your Vertigo XG device based on all of your specific rendering needs. See “Device Settings Tab and Pages” on page 4-12 for more information about the Vertigo XG device settings.

NTSC/PAL Configuration Settings - Fill Only, Input and Output

The table below provides you with a quick reference of the basic Vertigo XG device settings for a scenario with the following characteristics:

- **Resolution format**: NTSC or PAL
- **Input**: Fill-only
- **Output**: Fill-only
- **Number of channels**: 1 (single, assigned as A for the input and output channels) (You can assign the channel as either A or B, as long as the input and output pair match.)

☑ NOTE

The schemas presented in this section are generic and demonstrate possible minimal settings based on the specified profiles. Only the indicated settings are relevant to the profile, and all other parameters are meant to be set to their factory default state. These schemas are for demonstration purposes only. Be sure to configure your Vertigo XG device based on all of your specific rendering needs. See "Device Settings Tab and Pages" on page 4-12 for more information about the Vertigo XG device settings.

Dashboard Tab	Page	Parameter Name	Setting Name	Set to / State
Device Settings	General	Device Output	Fill	Enabled
Device Settings	Resolution	Rendering Resolution		NTSC / PAL
		Input Resolution		NTSC / PAL
		Output Resolution		NTSC / PAL
Device Settings	Genlock	Source		Blackburst
		Resolution		NTSC / PAL
Device Settings	Video	Input Channels		A
		Output Channels		A
Device Settings	Watch Dog		Enable Fill	Enabled
			Enable Key	Disabled
Device Settings	Video	Software Passthrough		Enabled

☑ NOTE

Depending on the installation, you may need to adjust the horizontal and vertical delay parameters after Genlock is set. These settings are located on the Device Settings' Genlock page (see "Genlock Page" on page 4-28).

NTSC/PAL Configuration Settings - Fill and Key, Output Only

The table below provides you with a quick reference of the basic Vertigo XG device settings for a scenario with the following characteristics:

- **Resolution format**: NTSC or PAL
- **Input**: None
- **Output**: Fill and key
- **Number of channels**: 1 (single, assigned as A for the input and output channels) (You can assign the channel as either A or B, as long as the input and output pair match.)

☑ NOTE

The schemas presented in this section are generic and demonstrate possible minimal settings based on the specified profiles. Only the indicated settings are relevant to the profile, and all other parameters are meant to be set to their factory default state. These schemas are for demonstration purposes only. Be sure to configure your Vertigo XG device based on all of your specific rendering needs. See "Device Settings Tab and Pages" on page 4-12 for more information about the Vertigo XG device settings.

Dashboard Tab	Page	Parameter Name	Setting Name	Set to / State
Device Settings	General	Device Output	Fill and Key	Enabled
Device Settings	Resolution	Rendering Resolution		NTSC / PAL
		Input Resolution		NTSC / PAL
		Output Resolution		NTSC / PAL
Device Settings	Genlock	Source		Blackburst
		Resolution		NTSC / PAL
Device Settings	Video	Input Channels		A
		Output Channels		A
Device Settings	Watch Dog		Enable Fill	Disabled
			Enable Key	Disabled
Device Settings	Video	Software Passthrough		Enabled

☑ NOTE

Depending on the installation, you may need to adjust the horizontal and vertical delay parameters after Genlock is set. These settings are located on the Device Settings' Genlock page (see "Genlock Page" on page 4-28).

HD 1080i30M Configuration Settings - Fill Only, Input and Output

The table below provides you with a quick reference of the basic Vertigo XG device settings for a scenario with the following characteristics:

- **Resolution format**: 1080i30M
  (Depending on the region, choose the appropriate frame rate format: 1080i25, 1080i30M, or 1080i30.)
- **Input**: Fill only
- **Output**: Fill only
- **Number of channels**: 1 (single, assigned as A for the input and output channels)
  (You can assign the channel as either A or B, but the input and output pair must match.)

☑ NOTE

The schemas presented in this section are generic and demonstrate possible minimal settings based on the specified profiles. Only the indicated settings are relevant to the profile, and all other parameters are meant to be set to their factory default state. These schemas are for demonstration purposes only. Be sure to configure your Vertigo XG device based on all of your specific rendering needs. See "Device Settings Tab and Pages" on page 4-12 for more information about the Vertigo XG device settings.

Dashboard Tab	Page	Parameter Name	Setting Name	Set to / State
Device Settings	General	Device Output	Fill	Enabled
Device Settings	Resolution	Rendering Resolution		1080i30M
		Input Resolution		1080i30M
		Output Resolution		1080i30M
Device Settings	Genlock	Source		Blackburst
		Resolution		1080i30M
Device Settings	Video	Input Channels		A
		Output Channels		A
		YUV Processing	GPU-PS	Enabled
Device Settings	Watch Dog		Enable Fill	Enabled
			Enable Key	Disabled
Device Settings	Video	Software Passthrough		Enabled

☑ NOTE

Depending on the installation, you may need to adjust the horizontal and vertical delay parameters after Genlock is set. These settings are located on the Device Settings' Genlock page (see "Genlock Page" on page 4-28).

HD 1080i30M Configuration Settings - Fill and Key, Output Only

The table below provides you with a quick reference of the basic Vertigo XG device settings for a scenario with the following characteristics:

- **Resolution format**: 1080i30M
  (Depending on the region, choose the appropriate frame rate format: 1080i25, 1080i30M, or 1080i30.)
- **Input**: None
- **Output**: Fill and key
- **Number of channels**: 1 (single, assigned as A for the input and output channels)
  (You can assign the channel as either A or B, but the input and output pair must match.)

☑ NOTE

The schemas presented in this section are generic and demonstrate possible minimal settings based on the specified profiles. Only the indicated settings are relevant to the profile, and all other parameters are meant to be set to their factory default state. These schemas are for demonstration purposes only. Be sure to configure your Vertigo XG device based on all of your specific rendering needs. See "Device Settings Tab and Pages" on page 4-12 for more information about the Vertigo XG device settings.

Dashboard Tab	Page	Parameter Name	Setting Name	Set to / State
Device Settings	General	Device Output	Fill and Key	Enabled
Device Settings	Resolution	Rendering Resolution		1080i30M
		Input Resolution		1080i30M
		Output Resolution		1080i30M
Device Settings	Genlock	Source		Blackburst
		Resolution		1080i30M
Device Settings	Video	Input Channels		A
		Output Channels		A
		YUV Processing	GPU-PS	Enabled
Device Settings	Watch Dog		Enable Fill	Disabled
			Enable Key	Disabled
Device Settings	Video	Software Passthrough		Enabled

☑ NOTE

Depending on the installation, you may need to adjust the horizontal and vertical delay parameters after Genlock is set. These settings are located on the Device Settings' Genlock page (see "Genlock Page" on page 4-28).

Dual Channel SD/HD Configuration Settings - Fill and Key, Input and Output

The tables below provide you with a quick reference of the basic Vertigo XG device settings for a scenario with the following characteristics:

- **Number of devices**: 2 Vertigo XGs (1 = SD, 1 = HD)
- **Resolution format**: SD device = NTSC, HD device = 1080i30M
  (Note: The SD and HD formats selected must have compatible frame rates.)
- **Input**: Fill only
- **Output**: Fill and key
- **Number of channels**: 2
  (HD Device: A = I/O Fill, C = output Key)
  (SD Device: B = I/O Fill, D = output Key)

This dual channel configuration requires that you create one configuration schema for each device. Therefore, in this example “HD device” refers to the device configured for the HD signal and “SD device” for the device configured for the SD signal.

☑ NOTE

The schemas presented in this section are generic and demonstrate possible minimal settings based on the specified profiles. Only the indicated settings are relevant to the profile, and all other parameters are meant to be set to their factory default state. These schemas are for demonstration purposes only. Be sure to configure your Vertigo XG device based on all of your specific rendering needs. See “Device Settings Tab and Pages” on page 4-12 for more information about the Vertigo XG device settings.

The table below lists the relevant settings for the “HD device”:

Dashboard Tab	Page	Parameter Name	Setting Name	Set to / State
Device Settings	General	Device Output	Fill and Key	Enabled
Device Settings	Resolution	Rendering Resolution		1080i30M
		Input Resolution		1080i30M
		Output Resolution		1080i30M
Device Settings	Genlock	Source		Blackburst
		Resolution		1080i30M
Device Settings	Video	Input Channels		A
		Output Channels		A
		YUV Processing	GPU-PS	Enabled
Device Settings	Watch Dog		Enable Fill	Enabled
			Enable Key	Enabled
Device Settings	Video	Software Passthrough		Enabled

The table below lists the relevant settings for the “SD device”:

Dashboard Tab	Page	Parameter Name	Setting Name	Set to / State
Device Settings	General	Device Output	Fill	Enabled
Device Settings	Resolution	Rendering Resolution		NTSC
		Input Resolution		NTSC
		Output Resolution		NTSC
Device Settings	Genlock	Source		Blackburst
		Resolution		NTSC
Device Settings	Video	Input Channels		B
		Output Channels		B
Device Settings	Watch Dog		Enable Fill	Enabled
			Enable Key	Enabled
Device Settings	Video	Software Passthrough		Enabled

☑ NOTE

Depending on the installation, you may need to adjust the Fill and Fill & Key Delay settings, after Genlock is set. These settings are located on the Device Settings’ Video page (see “Video Page” on page 4-31).

6 CONTACT US

Contact Miranda Technical Support

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